

TANDBERG

Tactical II User Manual



Software Version E2

D5023501

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Introduction

The TANDBERG Tactical II videoconferencing system is ideal for field use by both military and civilian personnel. Its heavy-duty case makes it easy to transport and use wherever it is needed.

This User Manual is provided to help you make the best use of your TANDBERG Tactical II videoconferencing system.

Design features

- Easily transportable for military and civilian field usage
- Meets airline carry-on requirements
- Lightweight, 33 lbs, with a rugged, heavy-duty polyethylene case. The case is watertight with twin wheels and a retractable handle. Only 14.1" x 8.9" x 21.7" when closed and includes an auto pressure relief valve
- Integrated codec, built-in camera, 13" LCD screen, microphone, speakers, microphone headset, and powered remote control

Application features

- DES for secured but unclassified communications
- Compatible with secure DoD networks
- Ability to integrate type 1 encryption devices with storage space in case for KIV-7

Performance features

Tactical II: ISDN/IP

- ISDN/BRI (RJ-45), S-interface
- PC card slot (PCMCIA) for wireless LAN
- LAN/Ethernet (RJ-45) 10/100 Mbit
- Bandwidth up to 384 kbps ISDN / 768 kbps IP

Tactical II: V.35/IP

- V.35, leased-line
- PC card slot (PCMCIA) for wireless LAN
- LAN/Ethernet (RJ-45) 10/100 Mbit
- Bandwidth up to 384 kbps V.35 / 768 kbps IP



THROUGHOUT THIS MANUAL THE **LIGHTBULB** WILL INDICATE A HELPFUL TIP THAT WILL HELP YOU MAKE THE MOST OUT OF YOUR VIDEOCONFERENCING SYSTEM.

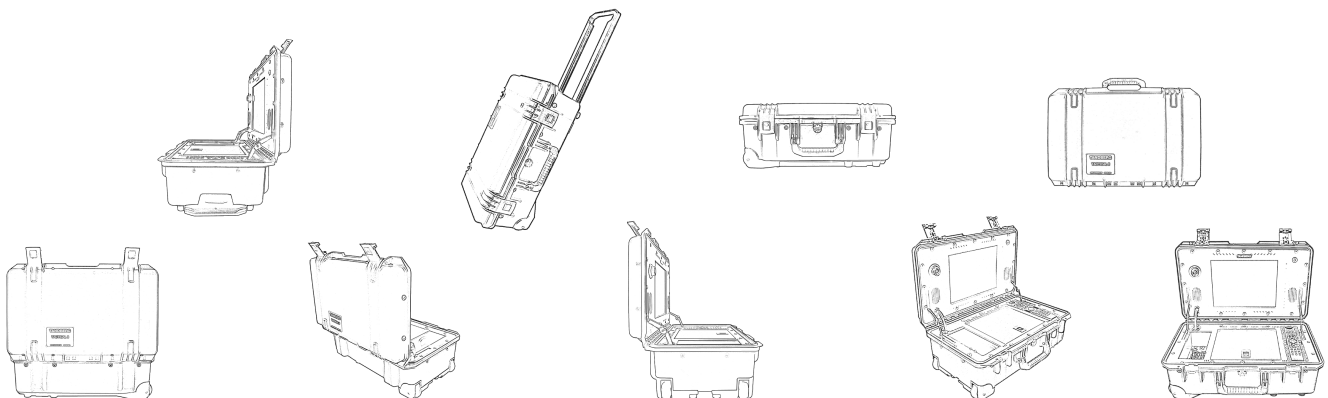
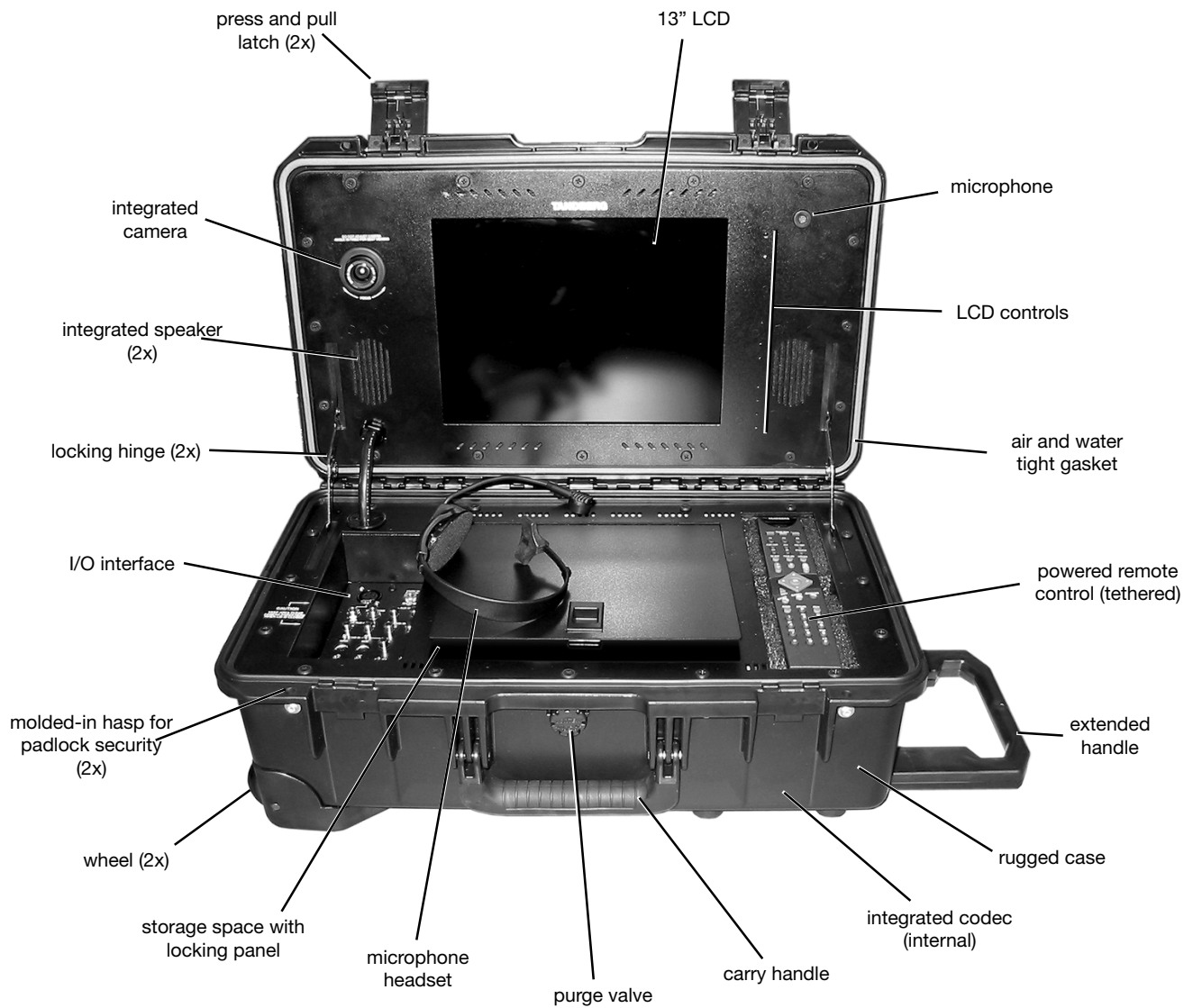


THROUGHOUT THIS MANUAL THE **NOTE** WILL PROVIDE IMPORTANT INFORMATION YOU WILL WANT TO PAY ATTENTION TO WHILE SETTING UP OR USING YOUR VIDEOCONFERENCING SYSTEM.



THROUGHOUT THIS MANUAL THE **WARNING** NOTE WILL INDICATE TO YOU THE NEED FOR PRECAUTION WHILE SETTING UP OR USING YOUR VIDEOCONFERENCING SYSTEM.

At a Glance: TANDBERG Tactical II



Tactical II Overview

Rugged Case

The rugged, lightweight, air tight, water tight case houses and protects all the equipment in a minimal amount of space and offer portability and mobility. The polyethylene case is dent and shatter resistant.

Latches: A pair of extra-wide press-and-pull latches that are easy on knuckles and will not pop open when dropped. Includes a molded-in hasp which allows for easy padlock security

Purge Valve: An auto pressure release valve that adjusts to changing environments. The valve is designed so as to not fall out.

Carry Handle: A soft-grip carry handle with rigid core affords extra comfort and strength.

Extended Handle: A high-strength extended handle with a tubular build can be used to roll the case on heavy-duty twin wheels.



WHILE THIS CASE IS DURABLE, IT IS NOT DESIGNED TO BEAR EXTRA WEIGHT NOR IS IT DESIGNED TO BE SHIPPED WITHOUT PROPER PACKAGING. WITHOUT ADEQUATE PACKAGING YOU MAY DAMAGE THE CASE AND ITS COMPONENTS. IT IS RECOMMENDED THAT YOU KEEP ALL ORIGINAL PACKING MATERIAL IN THE EVENT THAT YOU NEED TO SHIP THE TACTICAL II.

Codec

The heart of the Tactical II is the codec. Available in either ISDN/IP or V.35/IP (external network*) versions, the codec is securely housed within the rugged case. It is integrated to an accessible interface plate and tethered remote control providing ease of connectivity and use. Please refer to sections **GETTING STARTED** and **ADVANCED USE**.

Camera

The integrated camera is mounted to the left of the LCD display. The video format is NTSC for North America, and PAL for Europe. There is no camera control for camera that is integrated into the Tactical II.



THE INTEGRATED CAMERA IS CONNECTED TO THE AUX PORT OF THE CODEC. THIS LEAVES THE MAIN CAM PORT OPEN TO ADD AN OPTIONAL WAVE II CAMERA WHICH WILL ENABLE CAMERA CONTROL WITH THE SYSTEMS REMOTE CONTROL.

LCD Display and Controls

The 13" LCD display presents the far-end and near-end videoconferencing sites. It is integrated into the casing to enhance stability and mobility. The display is also used for navigating the Tactical II menus, on-screen help, video from connected video sources and snapshot images.

The LCD controls are buttons that can be accessed through small holes, aligned vertically to the right of the LCD screen, by using the tip of an extended paperclip (or similarly pointed object). The explanation of what each button controls is provided on the inside flap of the storage panel. Please refer to the LCD User Manual for further information.



ENSURE THAT THERE IS NO OBSTRUCTION IN THE AREA IN WHICH THE INTEGRATED CAMERA WILL SET WHEN THE CASE IS CLOSED. THERE IS A WARNING PRINTED ON THE CASE JUST TO THE LEFT OF THE INTERFACE PANEL.

Speakers

The speakers are integrated to either side of the LCD display.

* V.35, X.21, RS-449 WITH RS-355 DIALING, LEASED-LINE OR DATA TRIGGERED MODE

Main Microphone

The main microphone is mounted at the top right of the display. It features a tiny, inconspicuous packaging and produces clear, natural sound.

The Tactical II videoconferencing system is designed as a portable and mobile communication tool. As such, it is intended for use where the person talking is about 2 to 6 feet and is in front of the system. A microphone headset can be used to enhance privacy or to minimize extraneous noise.

Microphone Headset

The microphone headset can be used to receive audio through the headset rather than from the system speakers. The headset is plugged into the interface panel found on the left side of the case.

The other system audio outputs are not affected by the operation of the headset. Typically, the headset is useful in keeping all incoming audio private, or when there is much noise in the surrounding environment that the system speakers cannot be easily heard.



CONNECTING TO THE
HEADPHONE JACK WILL DISABLE
THE SYSTEM SPEAKERS .

Remote Control

The TANDBERG remote control is used to control all functions of the Tactical II system. The remote control does not require batteries as it is attached to the system by a retractable tether that powers the remote.

Network Terminating Units

In North America, to use the three ISDN BRI interfaces provided for the Tactical II, network terminating units must be used to connect the Tactical II system to the public ISDN network. See Appendix 1 for more information on these units.

Power Supply

AC and DC power supply units are provided for flexibility of use in different environments.

The AC power supply can be used by connecting to any AC power source.

The DC power supply can be used in mobile environments, such as plugging into a vehicle's cigarette lighter.

Precautions

- Never install telephone wiring during a lightning storm.
- Never install telephone jacks in wet locations unless the jack is specifically designed for wet locations.
- Never touch uninstalled telephone wires or terminals unless the telephone line has been disconnected at the network interface.
- Use caution when installing or modifying telephone lines.
- Avoid using a telephone (other than a cordless type) during an electrical storm. There may be a remote risk of electrical shock from lightning.
- Do not use the telephone to report a gas leak in the vicinity of the leak.
- The socket outlet shall be installed near to the equipment and shall be easily accessible.
- Never do any installation of cables without first unplugging the Tactical's power cord.
- 1TR6 network type is not approved for connection directly to the telecommunications network. This network type is only to be used behind a PABX.
- X.21 network type is not approved for connection directly to the telecommunications network. This network type is only to be used together with already approved equipment, and is not meant for direct connections to the telecommunication networks.
- V.35/RS-449/RS-366 network type is not approved for connection directly to the telecommunications network. This network type is only to be used together with already approved equipment, and is not intended for direct connection to the telecommunication networks.
- Allow adequate air circulation to prevent internal heat build-up. Do not block any of the ventilation openings of the apparatus.
- Do not install the system in a location near heat sources such as radiators or air ducts, or in a place subject to direct sunlight, excessive dust, mechanical vibration or shock.
- Route the power cord to avoid it being walked on or pinched by items placed on or against it, paying particular attention to the plug, receptacle, and the point where the cord enters the unit.



THE TACTICAL SYSTEM IS NOT DESIGNED TO BE SHIPPED WITHOUT PROPER PACKAGING AND HANDLING -- YOU MAY RISK DAMAGE TO YOUR SYSTEM.

Getting Started

System start-up

The TANDBERG Tactical II videoconferencing system will be ready to use when it is supplied with power. If the system is left idle for 15 minutes, it will enter into standby mode. Pressing any key or picking up the remote control will wake up the system. An incoming call will also wake up the system.

If the system does not respond, check that all equipment is powered on. If the equipment is not on, make sure that the power cord of the Tactical II is plugged in. You will want to ensure that any other optional display and peripheral equipment are powered on.

Welcome menu

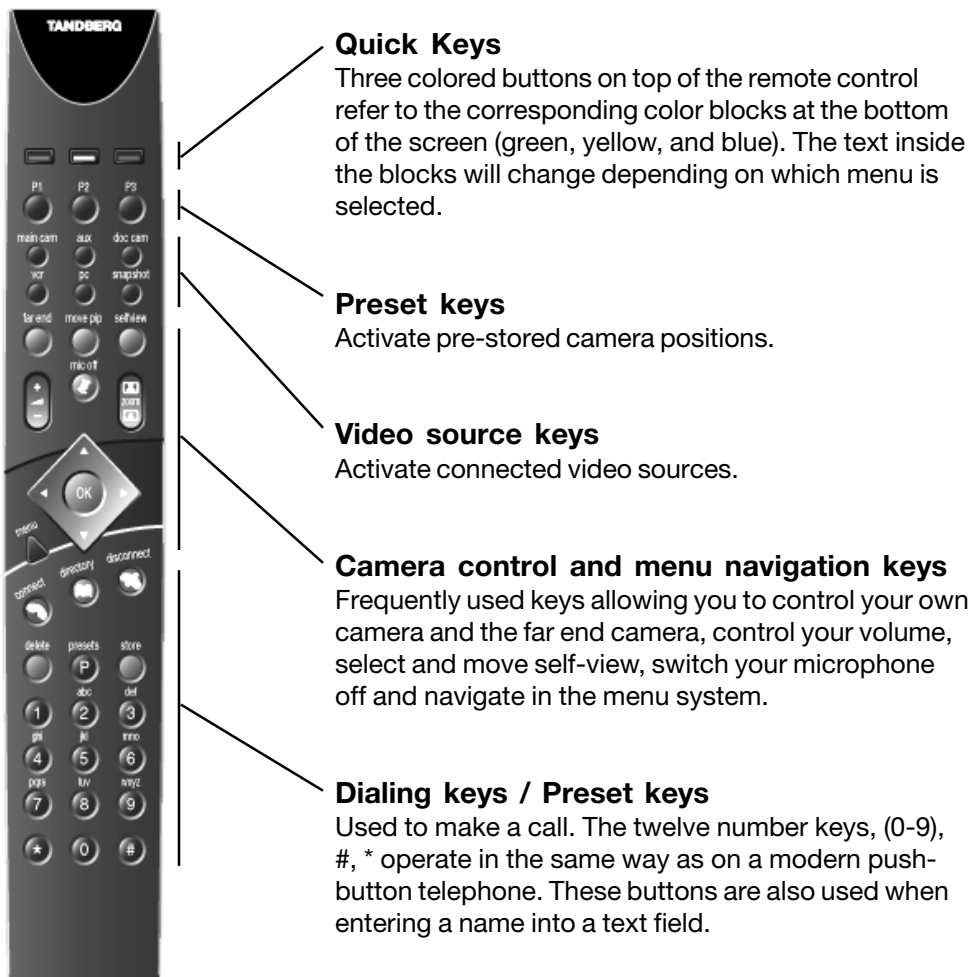
After a user-definable boot-up logo is shown (see APPENDIX 4), the following menu appears on the screen. This menu should provide you with the most important system information. The three color-coded menu items shown correspond with the same colored **QUICK KEYS** on the remote control. For example, to make a call you can press the **GREEN QUICK KEY**.



Basics

The system's most commonly used functions are accessible directly from the remote control by single key presses. In addition, the user interface is represented by on-screen menus. Individual items within the menus and lists can be selected by moving a white highlighter bar to the desired option.

The remote control is powered by a tether that also passes the infra-red signal to the codec. You may choose to operate the remote while leaving the remote in the case, or hold the remote in hand and operate the unit from a distance up to approximately 6 feet.



THE REMOTE CONTROL IS HARD-WIRED TO PASS THE IR SIGNAL DIRECTLY TO THE CODEC. IT IS NOT NECESSARY TO HOLD THE REMOTE. YOU MAY CHOOSE TO USE THE REMOTE IN ITS HOLDER OR HOLD THE REMOTE IN YOUR HAND.

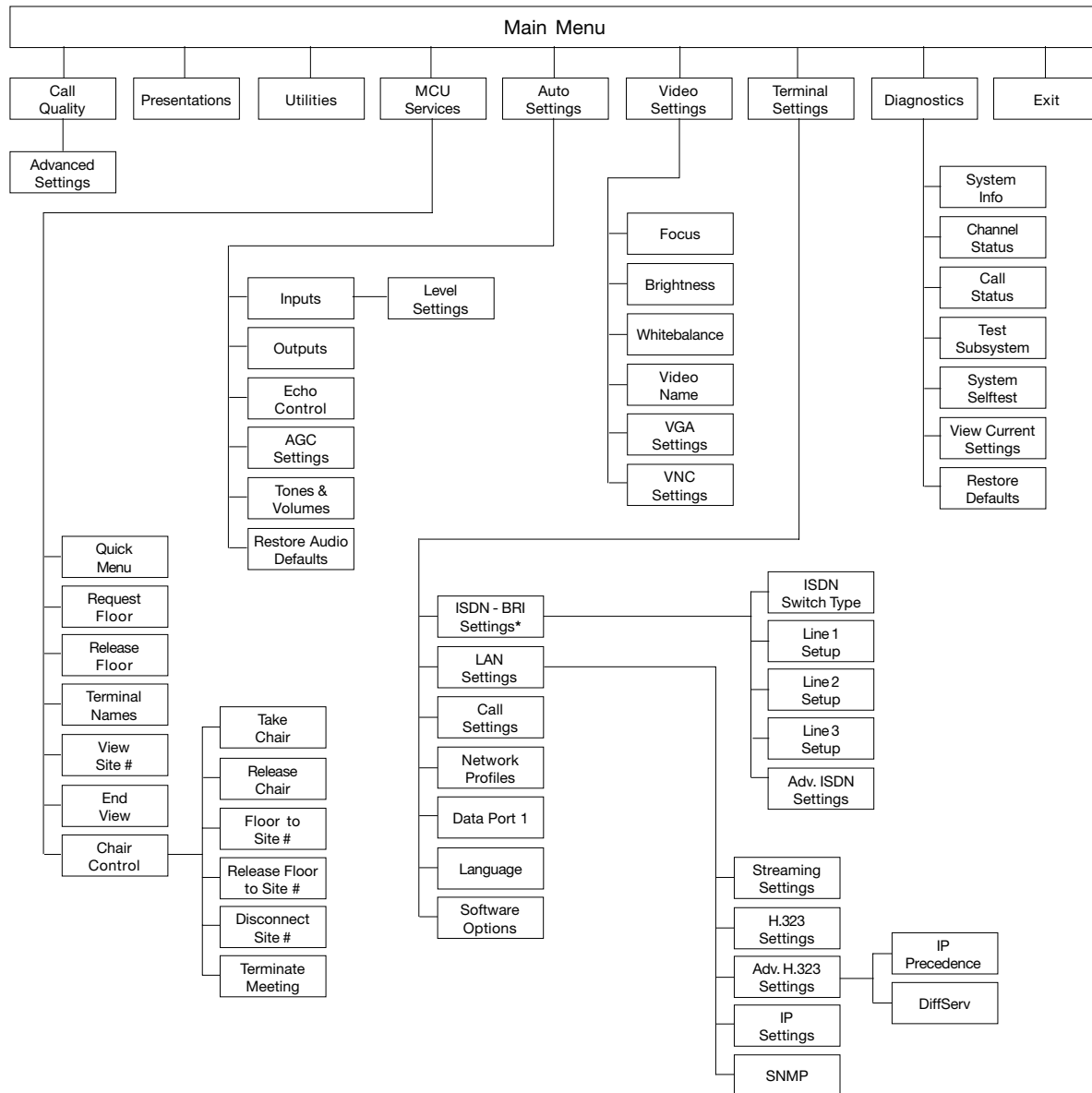


PRESETS ARE NOT AVAILABLE FOR INTEGRATED CAMERA OF THE TACTICAL II.

Menu Structure

The on-screen menu structure is shown below. Press the **MENU** button on the remote control to enter or leave the 'Main Menu'.

menu



Press **UP/DOWN/LEFT/RIGHT** to navigate the menu structure..

Press **OK** to select.

System Configuration

- Ensure that the system is powered.
- After the system has performed a brief self-test routine, product logo and a 'Welcome' menu will be displayed on the monitor.



WORKING THROUGH THESE SETTINGS ARE ESSENTIAL FOR OPTIMAL SYSTEM SETUP.

- Enabled but unused ISDN lines (lines not active) should be disabled. Select the **QUICK KEY 'System Info'** (on the remote control) to view line status.
- Press **MENU** on the remote control. Select the menu 'Terminal Settings' > 'Network' > **'ISDN-BRI settings'**. Select the relevant **'Line Setup'** menu and set **'Enabled: Off'**.
- Enter 'System Name' to identify the system during an MCU conference. Select 'Utilities' > **'System Name'** and enter the name using the number keys (as on a mobile phone).
- Select the language you want to use in 'Terminal Settings' > **'Language'**.
- If you are using two monitors, set 'Utilities' > **'Dual Monitor: On'**.
- To activate MultiSite^{TF} and/or Presenter, enter an option key (see paper-work accompanying your system), see 'Terminal Settings' > **'Software Options'**.
- Press **CONNECT** on the remote control. A dial tone should be heard if the network is active.
- Using the monitor remote control, adjust the volume on the monitor to a level of your choice. This volume will be the default volume for all calls.

menu



connect



ISDN configuration

For each installation of the system it is necessary to configure the unit. All configuration parameters are available via the menu system.



- Press **MENU** on the remote control. Select the menu 'Terminal Settings' > **'Network'**.
- Specify the settings for the network.

For details, follow the instructions in the 'Advanced Use' > 'Terminal Settings' > **'Network Configuration'** section of this manual.

For further information refer to the examples in:

Appendix 1: Connecting to ISDN using NT1 network adapters

APPENDIX 2: CONNECTING TO THE SWITCHED 56 NETWORK

LAN configuration



- Press **MENU** on the remote control. Select the menu 'Terminal Settings' > **'LAN Settings'**.
- Specify the necessary LAN settings according to the instructions from your LAN administrator. If there is an H.323 Gatekeeper present on your LAN, see also **'H.323 Settings'**.

For details, follow the instructions in the 'Advanced Use' > 'Terminal Settings' > **'LAN Settings'** section of this manual.

Making and Ending Calls

Making a call

To make a call, enter the number or the IP-address of the unit you wish to call using the **DIALING KEYS** and press **CONNECT**.



Make a Call		
Number <input type="text"/>		
Press CONNECT to start call		
Quality: Max.	Net: Auto	Exit

ISDN call

The system will, by default, try to connect using **Quality: Auto** (see table overleaf). If the requested quality (bandwidth) cannot be established, the system will establish a connection on as high quality as possible.

The SoftMux^{TF} ensures high reliability and includes the unique Downspeeding^{TF} feature. If channels are dropped during a meeting, Downspeeding^{TF} automatically maintains the connection without interrupting the call in progress. The SoftMux^{TF} also enables you to dial to other videoconferencing equipment, phones and mobile phones in the same way and provides you with on-screen, real-time feedback on the progress of a call.

LAN call

To make a call via a LAN, enter an IP-address by using a * as the 'dot' in the IP-address, e.g. 123*3*0*12 will be interpreted as 123.3.0.12. If a gatekeeper is present, you may place IP-calls using "telephone-style" numbers (an E.164 alias), according to the numbering plan implemented in the gatekeeper. The dialed number will then be translated into an IP-address by the gatekeeper.

Access Code

If the system requires an 'Access Code', enter the code and press **OK** to proceed making a call:

Access Code		
<input type="text"/>		
Enter access code and press OK		
OK		Cancel

Using sub-address / extension address / MCU password

To specify an ISDN sub-address or its LAN equivalent extension address (TCS-4), add a star (*) after the number and then enter the sub-address/extension address.

EXAMPLE: 12345678*10 (<NUMBER> * <SUB-ADDRESS/EXTENSION ADDRESS/MCU PASSWORD>)



SUB-ADDRESS IS USED TO ADDRESS DIFFERENT SYSTEMS ON THE SAME ISDN LINE.

TCS-4 IS USED TO ADDRESS DIFFERENT SYSTEMS ON A LAN, WHEN DIALING IN VIA A GATEWAY.

When calling to external MCU's requiring a password (TSC-1), this password can be added after the star (*). If no password is specified, a menu will prompt you to enter the password (after connected to the MCU).

Selecting / setting default quality (bandwidth)

The default call quality setting '**Auto**' will be used if no specific quality is selected.

To select quality (bandwidth):

- Press the '**Quality**' QUICK KEY when you are in the dial menu. The 'Quality' menu will then be displayed:



SOME SOFTWARE VERSIONS AND NETWORKS DO NOT SUPPORT ALL CHANNEL SELECTIONS

- Choose the preferred quality by selecting the desired call rate in the '**Call Rate**' field.
- You may also press the '**Set as Default**' QUICK KEY in order to make the selected bandwidth the default bandwidth for subsequent calls.
- Set '**Set Restrict (56k)**' to '**On**' to make a restricted call. An indicator '**(56k)**' will be shown behind the number.



RESTRICTED CALL: A RESTRICTED CALL IS A CALL TO A 56 KBPS NETWORK. BY DEFAULT THE SYSTEM WILL DIAL AN UNRESTRICTED CALL (A CALL TO A 64 KBPS NETWORK) AND DOWNSPEED TO 56KBPS IF NECESSARY. TO FORCE A RESTRICTED CALL, SELECT 'SET RESTRICT (56k)'

TYPE OF CALLS

AUTO	384KBPS ON ISDN/768KBPS ON IP
MAX	384KBPS ON ISDN/768KBPS ON IP
768	768 KBPS (IP ONLY)
512	512 KBPS (IP ONLY)
384	384 KBPS (6B)
320	320 KBPS (5B)
256	256 KBPS (4B)
192	192 KBPS (3B)
128	128 KBPS (2B)(BONDING/H.221)
64	64 KBPS (1B)(H.221)
TELEPH	TELEPHONE CALL



DIALING TWO NUMBERS: SOMETIMES (ESPECIALLY WHEN CALLING TO AND WITHIN NORTH AMERICA) IT IS NECESSARY TO DIAL BOTH ISDN NUMBERS WHEN MAKING A VIDEO CALL USING 2X64 KBPS OR 2X56 KBPS. SELECT '**128**' IN THE QUALITY MENU. WHEN YOU RETURN TO THE DIAL MENU, BOTH '**NUMBER:**' AND '**2ND:**' ARE DISPLAYED. ENTER THE SECOND NUMBER.

Selecting / setting default network

To select a specific network, press '**Net**' when you are in the dial menu.:



- Highlight the network to be used in your call.
- Press '**Select**' to select network or press '**Set as Default**' to set the selected network as your preferred choice for this and all subsequent calls.

If '**Auto**' is selected, the system will select a network based upon the following criteria:

- If an IP-address (e.g. 123*3*0*12) is entered, '**LAN**' (H.323) is selected.
- If the first digits in the number match those set in '**H.323 Prefix**' under '**H.323 Settings**', '**LAN**' is selected.
- In other cases, '**ISDN**' (H.320) is selected.

If you want to assign a specific prefix to the network selection or if you want to define your own network configuration, see 'Advanced Use' > 'Terminal Settings' > 'Call Settings' > '**Network Profiles**'.

Answer a Call

To answer a call, press the **CONNECT** key.

Manual answer of a call is needed if the autoanswer facility is switched off. See 'Advanced Use' > '**Utilities**'.

connect



End a call

To end a call, press the **DISCONNECT** key.

disconnect



ENDING A CALL: SWITCHING OFF THE MONITOR(S) WILL NOT DISCONNECT A CALL. TO DISCONNECT A CALL YOU SHOULD PRESS THE DISCONNECT KEY.

Correcting keying mistakes

To delete the last digit (or character) entered, press the **DELETE** key.

delete



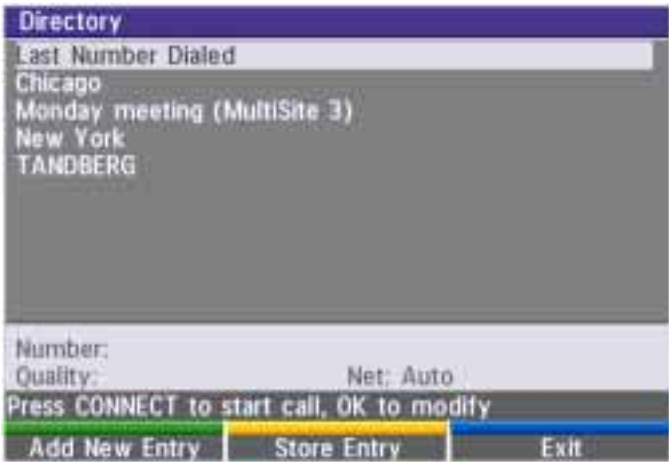
Directory

The directory is a local phone book that stores up to 100 directory entries including the last number dialed. The entries are sorted alphabetically. The entries can be point-to-point entries or MultiSite^{TF} entries (see menu below). The MultiSite entries will not be displayed when you are in a call.

By using the dataport file system or external management systems like the TANDBERG Management Suite (TMS), it is possible to store 400 additional entries. These entries can only be changed from the dataport or the management system.

When the system receives an incoming call and the calling party's number is found in the directory, the calling party's name will be displayed instead of the number on the status line.

Press **DIRECTORY** to bring up the following menu:



To find an entry, key in the first letter, for example 'T', and scroll with the up/down arrows.

To dial the selected entry press **CONNECT**. To edit the selected number before dialing, press **OK** (only point-to-point entries).

directory



WHEN LAST NUMBER DIALED IS HIGHLIGHTED, THE SECOND QUICK KEY STATES 'STORE ENTRY'. THIS MAKES IT POSSIBLE TO STORE LAST DIALED NUMBER.

connect



THE LEFT/RIGHT ARROWS WILL MOVE ONE PAGE UP/DOWN.

Add New Entry

When selecting '**Add New Entry**', an empty directory entry is displayed:



1. Move to '**Name**' and enter characters using the NUMBER KEYS on your remote control (as on mobile phones). Use '0' to enter 'space', use '#' to switch between upper- and lower case.
2. Move to '**Number**', key in the number and press **OK** on the remote control. Specify only one number. If two numbers are required, both numbers should be specified (2x64 or 2x56 calls).
3. Select '**Quality**' to specify call rate to be used.
4. Select '**Set Restrict(56k)**' to '**On**' to restrict the call rate. (A restricted call is a call to a 56Kbps network).
5. Select '**Net**' to specify the network profile to be used. See 'Selecting / setting default network'.
6. Select '**Save**' to save the entry and return to the Directory menu.

Delete Entry

When '**Delete Entry**' is pressed, the selected entry is deleted.

Edit Entry

To edit an entry, highlight the entry you want to edit and press '**Edit Entry**'. Edit the entry and select '**Previous Menu**' to return to the Directory menu.

Delete Entry

To delete an entry, highlight the entry and press **DELETE**.

Add MultiSite Entry

When selecting '**Add MultiSite**', an empty MultiSite^{TF} directory entry is displayed:



1. Move to '**Name**' and enter the MultiSite^{TF} meeting name.
2. Select '**Add Site**' to add meeting members by searching for point-to-point entries in the directory list.
3. Select '**Quality**' to override the suggested bandwidth per site.

EXAMPLE: QUALITY PER SITE: AUTO, FUNCTIONALITY:

THE SYSTEM HAS MAXIMUM CAPACITY 512KBPS. TWO ENTRIES ARE ADDED, ONE WITH 384KBPS AND ONE WITH 128KBPS.

1] SINCE ALL SITES MUST USE THE SAME BANDWIDTH, QUALITY PER SITE WILL BE 128KBPS.

2] IN ADDITION, MAXIMUM BANDWIDTH PER SITE CANNOT EXCEED THE TOTAL BANDWIDTH AVAILABLE DIVIDED BY THE NUMBER OF SITES. IN THIS CASE, THE MAXIMUM BANDWIDTH PER SITE CANNOT EXCEED $512/2=256$ KBPS. IF THE BANDWIDTH IN "1" IS HIGHER THAN THIS BANDWIDTH, THE 'QUALITY PER SITE' SETTING MUST BE REDUCED TO CORRESPOND WITH THE TOTAL CAPACITY OF THE SYSTEM.

4. Select '**Set Restrict(56k)**' to '**On**' if a restricted call shall be made (A restricted call is a call to a 56Kbps network).
5. When finished, select '**Save**' to save the MultiSite^{TF} entry.

Add Site

Highlight the entry you want to add to the meeting and press **OK**. If you do not find the entry you need, select '**Add New Entry**' to add an new point-to-point directory entry.



GLOBAL ENTRIES WILL NOT BE AVAILABLE FOR MULTISITE ENTRIES.

General Use

Adjusting Volume

Press the **VOLUME KEYS** to adjust the volume level. An on-screen indicator will show the current level.



View Outgoing Video (Selfview)

Press the **SELFVIEW** key to view your outgoing video.

To change the image being viewed on the monitor during a call press **SELFVIEW** until the desired image is shown (far end/selfview/still image or DuoVideo^{TF}).

Press **MOVE PIP** to move your selfview as a Picture-in-Picture to different corners of the screen or to switch it off.

selfview



move pip



Microphone on/off

To mute your microphone during a call, press **MIC OFF**. An on screen indicator will appear when the microphone is off. In a call, if audio is detected, the on-screen symbol will start to flash. Pressing **MIC OFF** one more time will activate the microphone again.

mic off



PRESSING **Mic Off** WILL MUTE AUDIO INPUTS Mic 1 & 2. IT WILL NOT MUTE AUDIO FROM AUDIO INPUTS 3 & 4.

On Screen Symbols

The system has a number of symbols signalling different settings



This symbol will be shown when the volume is turned off on the system.



This symbol will be shown when the microphone is muted/turned off. It will also start to flash if audio is detected in the room during a call.



This 'double padlock' symbol will be shown when AES* encryption (Secure Conference) is active.



This 'single padlock' symbol will be shown when DES encryption (Secure Conference) is active.



This 'open padlock' symbol is shown during the initialization phase for encryption. During this period the call is not secure.



When the system is 'On Air' in a Multisite^{TF} conference, this symbol will be shown.

* OPTIONAL FEATURE
TF A TANDBERG FIRST

Do Not Disturb / Sleep Mode

Press any QUICK KEY when not in a call to activate the 'Quick Menu'.



When '**Do Not Disturb**' is activated, the system will not accept any incoming calls. The caller will hear a busy tone when calling this unit. A status line will indicate when 'Do Not Disturb' is active.

When '**Sleep Mode**' is selected, the following QUICK KEYS are displayed:



Pressing '**Sleep Now**' puts the monitors in sleep mode. The system will still accept incoming calls.

Pressing '**60 Minutes**' or '**3 Hours**' will delay entering sleep mode accordingly.

Pressing any key or picking up the remote control will deactivate 'Do Not Disturb'/'Sleep Mode'.

To see numbers, line status etc., select '**System Info**'. For further information see 'Advanced use' > '**Diagnostics**'.

Controlling the Main Camera

The integrated camera is configured to operate off the AUX input of the codec and is not controllable (only manual focus -- see drawing at right).

The MAIN CAM input is open to add an optional WAVE II camera that is controllable.

Moving / zooming camera

To control the Main Camera use the **DIRECTIONAL/OK** key for pan/tilt

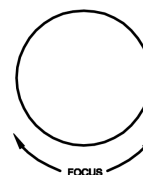
Use the **zoom** key for zooming in on an area.

Focusing camera

The Main Camera is set for autofocus by default. If the Main Camera is moved (pan/tilt/zoom), autofocus will be switched On automatically for 5 seconds.

To manually focus the Main Camera, see 'Advanced use' > '**Video Settings**'.

DO NOT ADJUST CAMERA
ANGLE IS FIXED FOR BEST VIEWING



IF THE MENU SYSTEM IS ACTIVE,
THE ARROW KEYS WILL NAVIGATE
IN THE MENUS.

Selecting video sources

Press any of the following keys to select the video source to be transmitted to the far end:



THE AUX BUTTON ON THE
REMOTE WILL CALL THE SIGNAL
FOR THE INTEGRATED CAMERA TO
BE TRANSMITTED. MAIN CAM
WILL TRANSMIT THE OPTIONAL
WAVE II CAMERA IF CONNECTED.

Voice Activated Camera Positioning



THE INTEGRATED CAMERA IS NOT CONTROLLABLE.

Through Voice Activated Camera Positioning and the use of two microphones, the camera will automatically view the speaker.

Setup

Before using camera tracking, the camera positions used must be stored at presets P7 (Mic1) and P8 (Mic2).

EXAMPLE: THE CAMERA POSITION STORED AT P7 MUST BE RELATED TO MIC1, THEREFORE ALL PARTICIPANTS WHO ARE LOCATED CLOSEST TO MIC1 SHOULD BE INCLUDED IN THE P7 CAMERA POSITION ETC. WHEN CAMERA TRACKING IS ACTIVATED AND A PERSON CLOSE TO MIC1 SPEAKS, P7 WILL BE AUTOMATICALLY SELECTED.

Activating

Enable Camera Tracking by pressing '**CamTrack On**' in the '**Preset 0-9**' menu, which is activated by pressing the **P** button on the remote control. An on-screen indicator '**CamTrackOn**' will appear.

presets



When activating another video source (e.g., document camera), camera tracking will be temporarily disabled until you re-select MainCam or a MainCam preset.

Pressing **MIC OFF** will temporarily disable camera tracking.

mic off



A Voice Detector makes the system more tolerant of noise and ensures the camera will not be moved by noise such as paper shuffling, etc.

Deactivating

Disable Camera Tracking by:

- moving the camera manually.
- activating a MAINCAM preset when MAINCAM is already activated.
- disconnecting the call.
- An on-screen indicator '**CamTrackOff**' will appear.



THE CAMERA TRACKING SPEEDS MAY BE ALTERED IN THE 'VIDEO SETTINGS' MENU. SEE 'ADVANCED USE' FOR FURTHER DETAILS.

Presets

The preset buttons enable you to pre-store up to ten different settings. Each preset is able to store:

- Video source
- Camera position, pan/tilt/zoom/focus/brightness (if Main Camera)
- Audio source selection (see 'Audio Settings' in 'Advanced use')



CAMERA PRESETS ARE NOT CONFIGURABLE FOR THE INTEGRATED CAMERA. HOWEVER, PRESETS MAY BE CONFIGURED FOR VIDEO SOURCES.

Selecting presets

To select a pre-stored camera position, audio and video source, use the keys **P1 P2 P3** or press **P** until the on-screen indicator '**Preset 0-9**' appears and use 0-9 to activate P0-P9 presets. To exit 'Preset' mode, press **OK**.

P1-P3 are the same presets as when pressing **P** and then a number key **1-3**.



Storing presets

To store the current camera position, audio and video source:

- Press **STORE** once and wait for the on-screen indicator to appear.
- Then press one of the keys **P1 P2 P3** or a number key **0-9**.

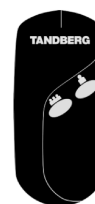


Storing preset 10-15

To store preset 10-15 the **TANDBERG Tracker** must be used.

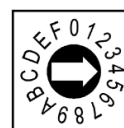
The TANDBERG Tracker is a small infrared remote control device used to direct the Main Camera to any one predetermined setting or location. Multiple trackers may be configured to be used in a typical classroom setting. Each Tracker has two buttons:

- One button to point the camera at a specific person/location.
- One button to point the camera at all participants.



To configure the Tracker:

- Select which preset number to be used on the TANDBERG Tracker. Beneath the battery in the tracker, there is a switch which can be set to 16 different positions between 0 and F (hexadecimal values). For preset 10 to 15, the numbers 9 to F should be selected (0=1, 1=2, ... 9=10, A=11, ... E=15, F=16)
- Press **STORE** once on the TANDBERG Remote Control and wait for the on-screen indicator to appear.
- Press the 'single person' button on the TANDBERG Tracker to store the preset.



For more information, contact your local TANDBERG representative.

Far end camera control (FECC)

Press the **FAR END** key until the '**FarEndCamera**' on-screen indicator is displayed.

For this feature to operate the far end must support 'Far end camera control' (H.281).

While activated you will be able to control the far end's camera (pan/tilt/zoom/focus) and presets.

To control the Far End Camera use the **DIRECTIONAL/OK** key for pan/tilt

Use the **zoom** key for zooming in on an area.

far end



Far end presets can be activated by pressing the keys **P1 P2 P3** or the number keys **0-9** to activate presets P0-P9.

Selection of far end video sources is achieved by pressing the buttons below when in FARENDCAMERA mode:



IF YOU PRESS **Doc CAM**, IT IS NOT CERTAIN THAT THE FAR END DOCUMENT CAMERA WILL BE DISPLAYED. THIS DEPENDS ON SYSTEM CONFIGURATION AT THE FAR END.

To prevent others controlling your camera, select '**Far End Camera Control:Off**' in the '**Utilities**' menu.

Sending and receiving snapshots

When a snapshot is sent, received or requested, it will be stored in the graphics memory. When a new image is sent or received, the old image will be erased. When disconnecting the call, the image will be erased.

Sending a snapshot

- Press **SNAPSHOT**.
- To send a snapshot from another video source (e.g. the document camera), select source:



- Press **SNAPSHOT**.

snapshot



SEE '**PRESENTATIONS**' MENU FOR AUTOMATIC SETUP OF THIS OPERATION.

Viewing a snapshot

The last sent or received snapshot will automatically be displayed on your screen.

- Press **SELFVIEW** to return to normal view.

Receiving a snapshot

A received snapshot will automatically be displayed on your screen.

- Press **SELFVIEW** to return to normal view.

Requesting a snapshot

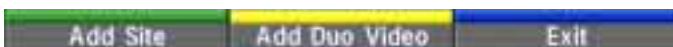
- Press **FAR END** until the '**FarEndCamera**' on screen indicator is displayed.
- Press **SNAPSHOT** . A snapshot from the far end is automatically displayed.

DuoVideo^{TF} *

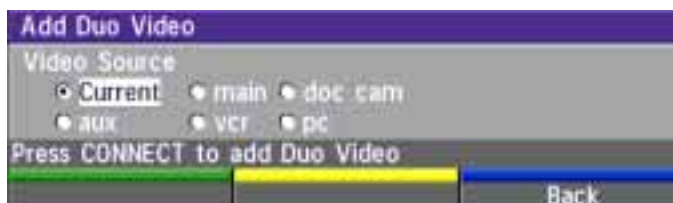
DuoVideo^{TF} is useful if you want to display live video from your document camera or another camera in addition to live video of yourself.

Add DuoVideo^{TF}

- Alt.1: Press any other video source than MAINCAM during a call. This will open DuoVideo^{TF} directly if the far end supports the automatic DuoVideo^{TF} functionality (requires also '**Duo Video Mode: Auto**' in '**Presentations**').
- Alt.2: To open DuoVideo^{TF} (also older versions of DuoVideo^{TF}), press **CONNECT** during a call. This will bring up the following menu:



- Select '**Add Duo Video**'. The following menu will be displayed:



- Select video source to transmit on DuoVideo^{TF}.
- Press **CONNECT** to add DuoVideo^{TF}.



VIEWING AND RECEIVING
SNAPSHOTS REQUIRE '**AUTO-
DISPLAY SNAPSHOT: ON**' IN
'**PRESENTATIONS**'

selfview



AUTOMATIC DuoVideo^{TF}
HANDLES DuoVideo^{TF} WITHIN THE
SAME CALL. IT IS NOT
NECESSARY TO MAKE A NEW
CALL AND THE CONNECT TIME
DECREASES A LOT. DuoVideo^{TF}
BORROWS BANDWIDTH FROM THE
MAIN CONNECTION. WHEN
DuoVideo^{TF} IS CLOSED, THE
BANDWIDTH IS RETURNED TO THE
MAIN CONNECTION. THIS
DuoVideo^{TF} IS ALSO
UNIDIRECTIONAL AND HENCE,
EASIER TO USE. WHEN IN AN
MULTISITE^{TF} CALL, THE
MULTISITE^{TF} CAN TRANSMIT THIS
DuoVideo^{TF} TO THE OTHER
PARTICIPANTS SUPPORTING THIS
DuoVideo^{TF} VERSION.



IF THE FAR END SUPPORTS
DuoVideo^{TF}, BUT NOT THE
AUTOMATIC DuoVideo^{TF}, PRESS
'**QUALITY**' TO SELECT **EXTRA**
BANDWIDTH TO BE USED BY
DuoVideo^{TF}. AN EXTRA CALL
WILL BE MADE AND DuoVideo^{TF}
WILL NOT BORROW BANDWIDTH
FROM THE MAIN CONNECTION.

End a DuoVideo^{TF} call

To end a DuoVideo^{TF} call, press **DISCONNECT**. Select if you want to disconnect only the DuoVideo^{TF} connection or the whole connection.

disconnect



Controlling camera, changing video source, presets in a DuoVideo^{TF} call

The main monitor will always display incoming video. The 2nd monitor will display outgoing video (DuoVideo^{TF} in full screen / Main local video in PIP).

Pressing **SELFVIEW** will toggle DuoVideo^{TF} full screen / Main source in PIP and vice versa. Pressing **SELFVIEW** will not change anything on the main monitor in a dual monitor setup.

Pressing **MOVE PIP** will move PIP only on the 2nd monitor in a dual monitor setup.

Controlling the camera, changing video source, using presets will affect the video source currently displayed in full screen mode.

EXAMPLE IF DUOVIDEO^{TF} IS SHOWN IN FULL SCREEN ON THE 2ND MONITOR, PRESSING ANY OF THE VIDEO SOURCE BUTTONS WILL CHANGE DUOVIDEO^{TF} SOURCE. IF THE MAIN CONNECTION IS SHOWN IN FULL SCREEN, PRESSING ANY OF THE VIDEO SOURCE BUTTONS WILL CHANGE THE MAIN CONNECTION SOURCE.

If both connections are selected to display the same video source, DuoVideo^{TF} will be closed.

MultiSite^{TF} (MCU)*

The system has a built-in multipoint conference unit (MCU), MultiSite^{TF}, which has the capability to establish meetings with up to 4 video sites (5 if at least one site is a telephone call, ISDN/analogue/mobile).

The video calls in a conference must be connected using the same bandwidth.

A conference can consist of any combination of ISDN/LAN sites.

It is possible to have telephone meetings with up to 5 participants.

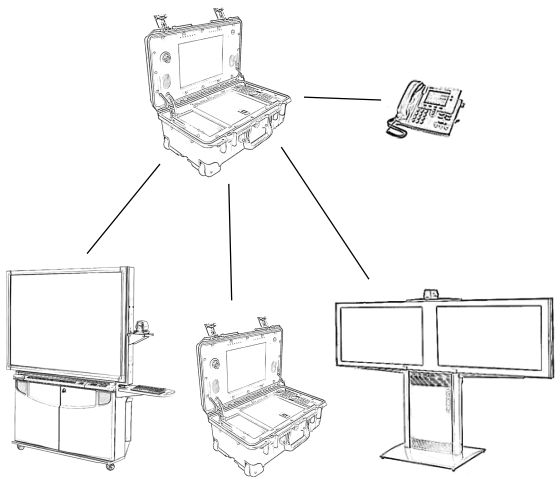
The MultiSite^{TF} supports both Voice Switched and Continuous Presence mode (see 'MCU Services' in 'Advanced use' for description of these modes).

Establishing a conference is done by first making a call to one site. When a call is established with the first site, the other sites are connected one by one.

It is possible to either dial out to the sites or the sites can dial in to the MultiSite^{TF}.

Both ISDN, IP and mixed ISDN/IP conferences can be encrypted if all systems supports encryption.

For encrypted calls, there is a maximum bandwidth of 768 Kbps for the whole conference. This means that a 3 site conference will have a maximum bandwidth of 384Kbps per connection, while a 4 site conference will have a maximum bandwidth of 256 Kbps per connection.



SEE 'UTILITIES', 'CONTINUOUS PRESENCE' TO CHANGE MODE.

THE SYSTEM SUPPORTS MIXED MULTI^{TF} WITH V.35 AND IP, HOWEVER THE IP SITE MUST BE ADDED AFTER THE V.35 IS UP AND RUNNING.

MultiSite^{TF} - Which quality can be used on each site?

	4 sites	4 sites + 1 phone	3 sites	3 sites + 1-2 phones	p-to-p + 1-3 phones
BRI (384 kbps)	128 kbps	64	192	128	192-320
LAN (768 kbps)	256	256 *	384	384 *	768 *

Mix ISDN/LAN example: if 4 sites are connected, two LAN sites and one ISDN site can be connected on 128 kbps.

NOTE - 4 sites indicates yourself + three other sites.

* - Requires 1-3 ISDN channels available.

WHEN MIXING ISDN AND LAN SITES, THE TOTAL BANDWIDTH LIMITATION IS THE SAME AS FOR THE ISDN BANDWIDTH.

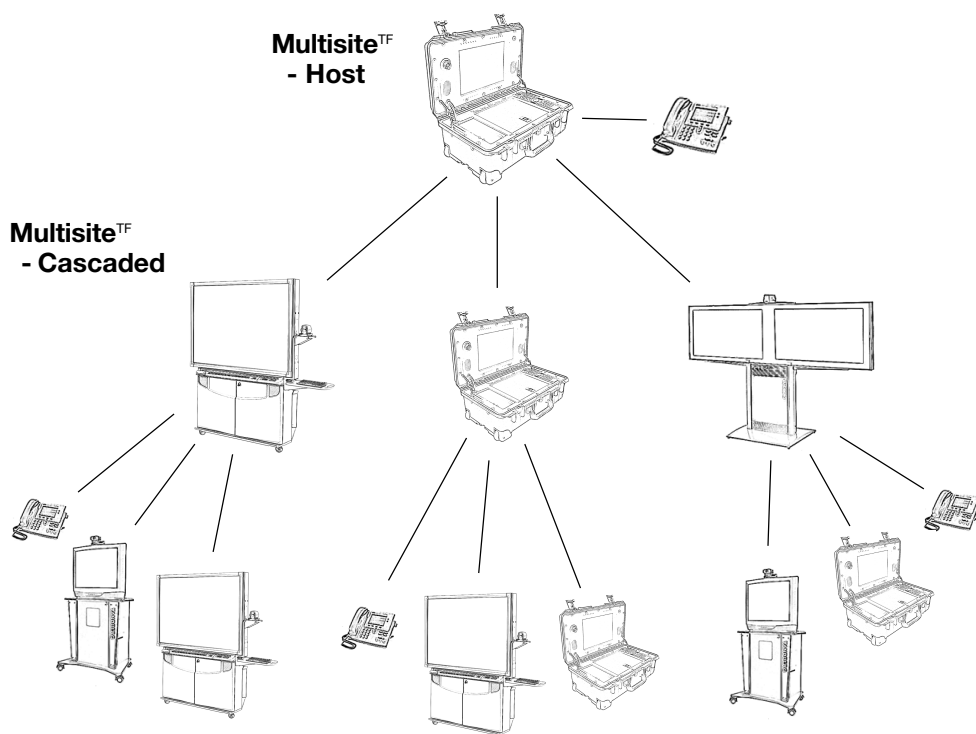
* OPTIONAL FEATURE
TF A TANDBERG FIRST

MultiSite^{TF} cascading

By connecting four MultiSite^{TF} systems together, it is possible to connect up to 10 video sites (including the four MultiSite^{TF} sites) plus 4 audio sites (telephones), see drawing below.

The host can connect up to 3 other video systems with MultiSite^{TF} functionality. The host can use Voice Switched or Continuous Presence mode.

The cascaded systems connect to two other video sites plus one audio site each. These systems will automatically run Voice Switched mode and transmit a full screen image to the host when calling on ISDN. When calling on IP, Voice Switched Mode must be selected manually.



ALL CONNECTIONS CAN BE ANY COMBINATION OF ISDN/IP.

Establishing MultiSite^{TF} meetings using Directory

It is possible to pre-define meetings using Directory. All sites will then be connected automatically instead of having to add one by one site.

- Press **DIRECTORY**.
- Highlight a MultiSite^{TF} entry and press **CONNECT**.

See 'Directory' section for further information.

Adding an extra site - dial out

First establish a normal point-to-point call. It is recommended to plan the bandwidth usage before making the first call so that you do not run out of bandwidth.

EXAMPLE: IF THE SYSTEM HAS 512KBPS AVAILABLE AND YOU WANT TO CONNECT 3 SITES IN ADDITION TO THE HOST, 128KBPS SHOULD BE SELECTED FOR THE FIRST CALL. THE SYSTEM WILL THEN AUTOMATICALLY USE 128KBPS WHEN CONNECTING THE OTHER SITES.

When the first site is connected, add a site to the conference using the following procedure:

- Press **CONNECT** to bring up the following menu:

Add Site	Add Duo Video	Exit
----------	---------------	------

- Press '**Add Site**' to bring up the MultiSite^{TF} dial menu.

Make a Call		
Number	<input type="text"/>	
Press CONNECT to add site		
Quality: Auto	Net: Auto	Exit

- Enter the number to call.

The quality will, by default, be the same as used by the first call. To place a telephone call instead of a video call, press '**Quality**' and select '**Teleph**' in the 'Quality' menu.

To use another network operator, press '**Net**' and select operator in the 'Net' menu.

- Press **CONNECT**

connect



IF THE MULTISITE SYSTEM DOES NOT HAVE ENOUGH BANDWIDTH TO ADD ANOTHER SITE, THE SYSTEM WILL AUTOMATICALLY DOWNSPEED TO ALLOW AN ADDITIONAL SITE TO BE ADDED TO THE CONFERENCE.
REQUIREMENT: FAR END MUST SUPPORT DOWNSPEED AND MUST HAVE ENOUGH BANDWIDTH.



CONNECT THE SYSTEM WITH THE LOWEST BANDWIDTH FIRST IN ORDER TO OPTIMIZE CONNECTION TIME.



IT IS POSSIBLE TO CONNECT SEVERAL TELEPHONES, E.G. 2 VIDEO SYSTEMS + 3 TELEPHONES (A TOTAL OF 5 SITES).

Adding an extra site - dial in

To dial in to the MultiSite^{TF} on **ISDN-BRI**:

- Site 2 must dial MultiSite^{TF} Number 2.
- Site 3 must dial MultiSite^{TF} Number 3.



TO FIND THE DIAL-IN NUMBERS FOR THE MULTI^{TF}SITE, PRESS 'MENU' AND 'SYSTEM INFO'

To dial in to the MultiSite^{TF} on **ISDN-PRI**:

- Dial the main number of the system ('My ISDN Number'). All sites can dial the same number.

To dial in to the MultiSite^{TF} on **IP**:

- Dial the IP Number or the IP Address of the system ('My IP Number'/'My IP Address').

When the MultiSite^{TF} receives an incoming call, the following menu is displayed:



- Pressing **CONNECT** is equivalent to pressing 'Accept'.
- Pressing **DISCONNECT** is equivalent to pressing 'Reject'.
- Pressing 'Do Not Disturb' will disable the MultiSite^{TF} from answering more incoming calls during the current conference. The calling party will receive a busy signal.

Disconnecting sites from a conference

To disconnect a site or end the conference, press **DISCONNECT**.

- Select site and press **OK** or the 'Disconnect Site' QUICK KEY.

disconnect



To end the meeting press the 'Disconnect All' QUICK KEY.



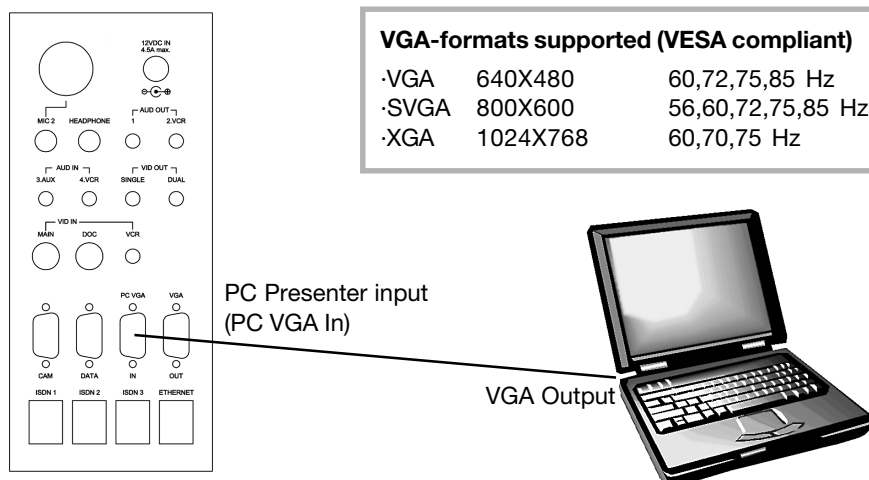
EACH SYSTEM WILL BE IDENTIFIED BY A SYSTEM NAME (IF SUPPORTED) AND THE NUMBER OF THE FAR END.

PC Presenter

Plugging a PC into the system is made extremely simple through the PC Presenter, avoiding the need for any additional hardware such as a projector, PC/Video converter or extra cables.

- Connect a VGA-VGA cable from your PC (VGA Output) to 'VGA In' on your system.
- Start your PC.
- Press **PC** on your remote control.
- Press **SELFVIEW** until the indicator 'Selfview' is displayed on your main monitor (single monitor system) or until you see the PC image on the second monitor.

If no PC image is displayed on your monitor, make sure that your PC transmits the image to the VGA Output, and that the PC transmits a supported VGA-format (see tip below). Consult your PC-operating manual to see how to transmit a VGA image from your PC (typically: Fn+F5).



THE PC VGA IN IS FOUND IN THE SAME PLACE FOR BOTH ISDN AND V.35 VERSIONS.

PC SoftPresenter *

PC SoftPresenter is used to display PC images on your system without using a VGA cable. The system and your PC must be connected to a LAN. In addition, VNC (Virtual Network Computing) server software must be installed on the PC.



'PC: VNC' MUST BE SET IN 'VIDEO SETTINGS'.

To show the PC image:

- Start the VNC software on your PC.
- Press **PC** on your remote control. Use UP/DOWN to activate PAGE UP/ PAGE DOWN on the PC.

For setup information and details, see 'Advanced use' > 'VNC Settings'.

* - OPTIONAL FEATURE

Web-interface

It is possible to access and maintain the system remotely via a local area network (LAN) using a standard Web-browser.

Connect your system to a local area network.

Configure your codec:

- Press MENU, select 'Terminal Settings' > '**LAN Settings**'
- Specify IP-assignment '**DHCP**' or '**Static**'. If DHCP is selected no other settings are needed. If Static is selected, '**IP-address**', '**IP-subnet mask**' and '**Gateway**' must be specified.

EXAMPLE: IP-ASSIGNMENT: STATIC
 IP-ADDRESS: 196.9.200.129
 IP-SUBNET MASK: 255.255.255.0
 GATEWAY: 196.9.200.21

menu



THE SYSTEM MUST BE
 RESTARTED BEFORE CHANGES IN
 THE 'LAN SETTINGS' MENU CAN
 TAKE EFFECT.

See 'Advanced use' > '**LAN Settings**' for further information.

- Start your Web-browser. In the address field type the IP-address of the codec. The Web-page of the codec will be shown.

Text Chat / Closed Captioning

While in an ISDN or IP call to another system supporting Text Chat (T.140), select 'Text Chat' from the Web-page of the codec. Enter text in the window displayed. When selecting '**Send Text**', the text will be displayed on the local and far-end monitor as shown below:



The local Text Chat window can be closed manually from the Web-interface by pressing '**Close Window**'. It will also close automatically after a few minutes without activity.

Streaming

To view streaming, select '**Streaming**' from the Web-page of the codec. See 'Advanced Use' > 'LAN Settings' > '**Streaming**' for further information.

Snapshots

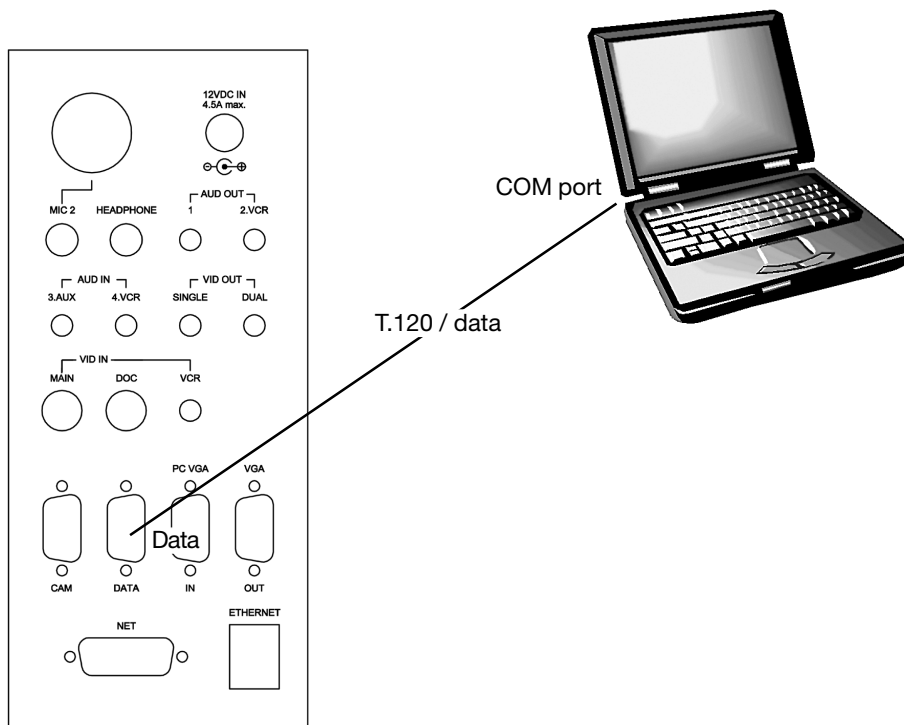
Snapshots of current stream (if MultiSite), selfview, far end and DuoVideo streams are accessible via http. See Appendix 5 for descriptions of the possible snapshot files.

T.120 and other PC applications

A PC can be connected to the system using a serial cable. This will enable interactive editing, file transfer and application sharing between two computers.

Appropriate communication software should be used (for example: Microsoft NetMeeting, Intel ProShare Premier, Windows HyperTerminal, Procomm Plus and so forth.)

The system has been specially designed to work with interactive programs and includes a data channel that can send and receive data to and from the far end at speeds of up to 38,400 baud.



IT IS NOT POSSIBLE TO USE T.120 IF THE XGA CONTROL CABLE IS CONNECTED AS DATA (DATAPORT 1) IS OCCUPIED.



THE DATA INPUT IS FOUND IN THE SAME PLACE FOR BOTH ISDN AND V.35 VERSIONS.

Advanced use

Main Menu

The menu system can be used to select available functions and utilities for the system.

To enter the menu system and the main menu, press the **MENU** key. You may leave the menu system at any time by pressing the **MENU** key.



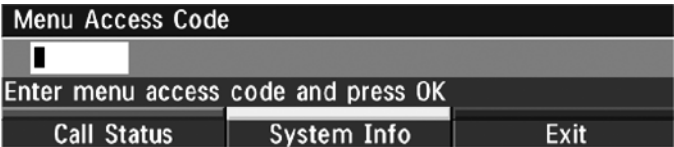
A MENU STRUCTURE MAP IS PROVIDED IN THE SECTION 'MENU STRUCTURE' AT THE FRONT OF THIS MANUAL.



IN THE FOLLOWING MENU DIAGRAMS THE DEFAULT SETTINGS ARE HIGHLIGHTED.

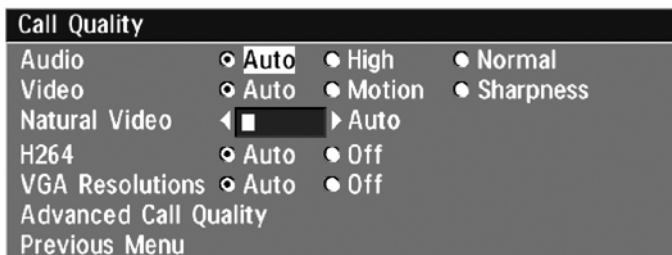
Menu Password

It is possible to password protect the menus on the TANDBERG system. To activate this feature, specify a 'Menu Password' in the 'Utilities' menu. By doing this only dialing and camera control commands will be available. When pressing the **MENU** key, the user will be asked to enter the 'Menu Access Code' as shown below.



Call quality

The 'Call Quality' menu allows you to select the preferred quality of your call.



DUE TO ACTIONS OR LIMITATIONS AT THE FAR END YOU MAY NOT ALWAYS BE ABLE TO ACHIEVE THE SELECTIONS YOU WANT.

Audio

AUTO	Optimized audio quality depending on bandwidth.
HIGH	High audio quality (G.722) regardless of bandwidth.
NORMAL	Telephone quality (G.728) regardless of bandwidth.



AUTO :
1-4 CHANNELS: G.722.1 IS SELECTED.
5 OR MORE CHANNELS: G.722 IS SELECTED.

Video*

AUTO	Will select 'Motion' or 'Sharpness' depending on selected video source**.
MOTION	Optimized for smooth motion video for all video inputs.
SHARPNESS	Optimized for sharp video for all video inputs.

Natural Video

Choose at what call quality level Interlaced video capabilities (iCIF) will be transmitted and enabled.

AUTO	Interlaced video capabilities (iCIF) will be transmitted and enabled.
OFF	Interlaced capabilities will not be transmitted. Useful if far end can not handle these capabilities.

H.264

AUTO	Optimized video quality depending what is available.
OFF	H.254 video compression and decompression will not be used

VGA Resolutions

AUTO	VGA capabilities (VGA/SVGA/XGA) and SIF capabilities will be transmitted and enabled.
OFF	VGA capabilities will not be transmitted. Useful if far end can not handle these capabilities.

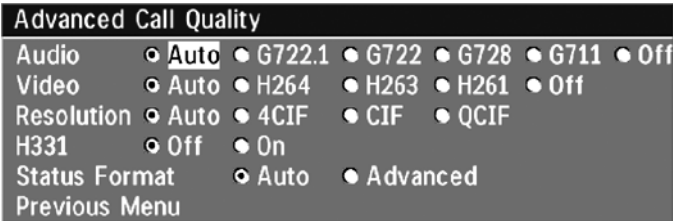


SIF CAPABILITIES WILL ENABLE BETTER VIDEO QUALITY FOR NTSC SYSTEMS (SIF: 352x240, iSIF: 352x480, 4SIF: 704x480).

* IF OPTION 'PRESENTER' IS NOT INSTALLED, OR IF H.263 IS NOT USED, ONLY CIF RESOLUTION WILL BE USED FOR ALL SELECTIONS.

** MAINCAM/AUX/VCR WILL SELECT 'MOTION'. DocCAM/PC WILL SELECT 'SHARPNESS'.

Advanced call quality



THE 'AUTO' SETTINGS ARE RECOMMENDED CHOICES FOR MOST CASES. THE OTHER AUDIO, VIDEO AND RESOLUTION SELECTIONS MADE IN THIS MENU WILL OVERRIDE THE SELECTIONS MADE IN THE 'CALL QUALITY' MENU AND ARE NOT RECOMMENDED TO BE CHANGED FOR NORMAL USE.

Audio

- AUTO 'Audio: Auto/High/Normal' in 'Call Quality' will be used.
- G.722.1 Compressed high quality audio (7 kHz).
- G.722 High quality audio (7 kHz).
- G.728 Compressed normal quality audio (phone quality, 3.1 kHz).
- G.711 Normal quality audio (telephone quality, 3.1 kHz).
- OFF No audio is transmitted.

Video

- AUTO Optimized video quality depending on available bandwidth.
- H.254 Bandwidth efficient video compression and decompression.
- H.263 Bandwidth efficient video compression and decompression.
- H.261 Normal video compression and decompression.
- OFF No video is transmitted.

Resolution

- AUTO The setting of 'Video: Auto/Motion/Sharpness' in 'Call Quality' will be used. See NOTE at right.
- 4CIF* Digital Clarity^{TF} (704 x 576 pixels), only for H.263.
- CIF High resolution video (352 x 288 pixels).
- QCIF Low resolution video (176 x 144 pixels).



RESOLUTION, AUTO FUNCTIONALITY (IF SUPPORTED BY FAR END) WHEN:

'VIDEO: MOTION' --
LOW BANDWIDTHS: CIF, SIF
HIGH BANDWIDTHS: ICIF, ISIF

'VIDEO: SHARPNESS' --
4CIF, 4SIF, VGA, SVGA, XGA

H.331

- OFF Standard two-way communication with quality negotiation between both sides.
- ON Used when broadcasting a video conference from one site to many others, e.g. via satellite, where there is no possibility to negotiate quality between the receivers and the originator due to one-way communication.

Status Format

Provides call quality feedback on the status line.

- AUTO Video OFF/ON, Audio OFF/NORMAL/HIGH
- ADVANCED Shows video/audio standards (i.e.: Video: H.261 CIF, Audio: G.722).

* REQUIRES OPTION 'PRESENTER'.
TO CHECK WHICH OPTIONS ARE INSTALLED, SEE THE 'SYSTEM INFO' MENU IN 'DIAGNOSTICS'.
TF TANDBERG FIRST

Presentations

Presentations			
Presentation Mode	<input checked="" type="radio"/> Normal	<input type="radio"/> Preview	
Duo Video Quality	<input checked="" type="radio"/> Auto	<input type="radio"/> Motion	<input type="radio"/> Sharpness
Duo Video Mode	<input type="radio"/> Auto	<input checked="" type="radio"/> Manual	
Duo Video Number	<input checked="" type="radio"/> Auto	<input type="radio"/> Manual	
Duo Video / Snapshot Source			
	<input checked="" type="radio"/> Current	<input type="radio"/> main cam	<input type="radio"/> aux
	<input type="radio"/> doc cam	<input type="radio"/> vcr	<input type="radio"/> pc
Auto-Display Snapshot		<input type="radio"/> Off	<input checked="" type="radio"/> On
Snapshot Filter		<input type="radio"/> Off	<input checked="" type="radio"/> On
Previous Menu			

Presentation Mode

To send a snapshot immediately after pressing **SNAPSHOT** select '**Presentation Mode: Normal**'.



To preview the image before it is transferred as a snapshot, select '**Presentation Mode: Preview**'. When pressing **SNAPSHOT** you will be allowed to view your snapshot, e.g. from the document camera, before sending it as a snapshot by pressing **SNAPSHOT** again. The far end will not see the snapshot while you are adjusting it.

DuoVideo^{TF} Quality *

AUTO	Optimized video depending on selected video source and bandwidth in use**.
MOTION	DuoVideo ^{TF} is optimized for smooth motion video. This mode is ideal if the image from two W.A.V.E. cameras should be simultaneously transmitted to the far end.
SHARPNESS	DuoVideo ^{TF} is optimized for sharp video, Digital Clarity ^{TF} . This mode is ideal when using a document camera or a PC on DuoVideo ^{TF} . If the far end does not support 4CIF live video, CIF will be selected.

DuoVideo^{TF} Mode *

AUTO	Pressing any video source during a call will automatically open DuoVideo ^{TF} (if the far end supports the automatic DuoVideo ^{TF} functionality).
MANUAL	DuoVideo ^{TF} must be opened by pressing CONNECT during a call and selecting ' Add DuoVideo '.

* REQUIRES OPTION 'PRESENTER' AND H263 VIDEO. TO CHECK WHICH OPTIONS ARE INSTALLED, SEE THE 'SYSTEM INFO' MENU IN 'DIAGNOSTICS'.

** 4CIF: PC AND DOCCAM, OTHERWISE CIF.

DuoVideo^{TF} Number*

AUTO	When adding DuoVideo ^{TF} in a conference, DuoVideo ^{TF} is connected automatically if supported by the far end.
MANUAL	When adding DuoVideo ^{TF} in a conference and connected towards a system with no DuoVideo ^{TF} capabilities, enter the DuoVideo ^{TF} number into the 'Number' field in the 'AddDuo Video' menu. This can be the number to another system (only video will be transmitted to the system receiving DuoVideo ^{TF}).

DuoVideo^{TF} / Snapshot Source

Select which video source DuoVideo^{TF} transmits.

If you want the document camera to be the default source when using DuoVideo^{TF} / snapshot, select **'Duo Video / Snapshot Source: DocCam'**.

To use the same video source as on the first connection for DuoVideo^{TF} / snapshot, select **'Duo Video / Snapshot Source: Current'**.

Auto-Display Snapshot

Select **ON** to automatically display a received snapshot. If this selection is OFF, you will have to press **SELFVIEW** to display a snapshot.

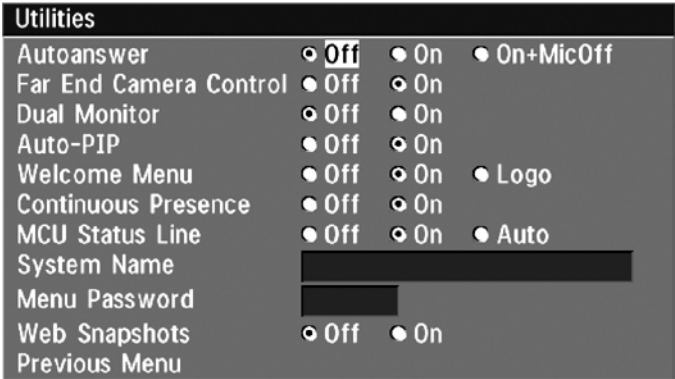
Snapshot Filter

Select **ON** to remove any instability in the high quality snapshot.

* REQUIRES OPTION 'PRESENTER'. TO CHECK WHICH OPTIONS ARE INSTALLED, SEE THE 'SYSTEM INFO' MENU IN 'DIAGNOSTICS'.

TF TANDBERG FIRST

Utilities



Autoanswer

- ON

The system will automatically answer all incoming calls.
- ON+MICOFF

The system will automatically answer all incoming calls and switch the microphone off when the call is connected. Press **MIC OFF** to switch the microphone ON.
- OFF

You must manually answer all incoming calls by pressing the **CONNECT** key.

Far end camera control

- ON

The far end will be able to:
 - Control your camera
 - Select your video sources
 - Activate your presets
 - Request snapshots
- OFF

None of the four features above on the local system can be accessed by the far end, however you will still be able to control the camera on the far end.

Dual Monitor

- ON

Selfview, snapshots and DuoVideo^{TF} will be displayed on the second monitor.
- OFF

The second monitor shows selfview only.

Auto-PIP

- ON

Your selfview will automatically be displayed (as a Picture-in-picture) whenever the camera position or video source is changed. Picking up the remote control will also display your selfview.

Welcome Menu

The WELCOME MENU can be shown when the system is not in use, and when sleep-mode is not activated.

ON	The WELCOME MENU is shown when the system is not in sleep mode.
OFF	The WELCOME MENU is not shown.
LOGO	If a logo is uploaded to the system, it will be shown when this button is selected. See APPENDIX 4.

Continuous Presence

ON	The screen is divided into three or four squares, each displaying the video image of a different participant.
OFF	The active site will be displayed in full screen during a MultiSite ^{TF} conference. Also called Voice Switched mode.



TO DISPLAY YOUR SITE IN FULL SCREEN WHEN 'ON' IS SELECTED, PRESS THE QUICK KEY 'REQUEST FLOOR'.

MCU status line

ON	The MultiSite ^{TF} /MCU/DuoVideo ^{TF} indicators will be displayed and provide information about the conference.
OFF	The MultiSite ^{TF} /MCU/DuoVideo ^{TF} indicators will not be displayed.
AUTO	The MultiSite ^{TF} /MCU/DuoVideo ^{TF} indicators will be displayed for a few seconds and then timed out. When grabbing the remote control, the indicators will be shown again.

System Name

Identifies the system:

- during an MCU conference call.
- when using the Web-interface.
- when the codec is acting as an SNMP Agent.
- towards a DHCP server.
- as an H.323 ID. Other systems can call us using this name instead of IP-number/IP-address.

Menu Password

Enter the code which should be entered to get access to the menus on the TANDBERG system. When pressing the '**Menu**' button on the remote control, the user will be asked to enter the Password written here.

Web Snapshots

The system is able to generate JPEG snapshots and provide them to the world outside by request (as 'http get' or via ftp). See Appendix 5 for descriptions of the possible snapshot files.



SNAPSHOTS ARE NOT GENERATED IF THE CONFERENCE IS SECURE.

ON	Snapshots generation is enabled.
OFF	Snapshots generation is disabled.

MCU services

A Multipoint Control Unit (MCU) enables several sites to participate in the same conference.

An MCU conference can have different modes:

VOICE SWITCHED	means that the image of the person currently speaking will be broadcast to all the other conference participants. This will remain the case until another participant starts to speak.
CONTINUOUS PRESENCE	shows several participants on the same screen at the same time.
CHAIRMAN CONTROL	functionality enables one participant to control the meeting by selecting which of the conference participants is to be broadcast to the other participants.

The system can also control external MCUs in a very flexible manner using the functions described below.



THIS SYSTEM HAS AN OPTIONAL BUILT-IN MCU, MULTISITE, WHICH SUPPORTS UP TO 3 VIDEO CALLS (4 SITES) AND ONE TELEPHONE CALL. THE MULTISITE SUPPORTS BOTH VOICE SWITCHED AND CONTINUOUS PRESENCE MODE, SEE SECTION 'MULTISITE'.



DURING AN MCU CONFERENCE, A STATUS LINE WILL PROVIDE INFORMATION ABOUT THE CONFERENCE. TO REMOVE THIS STATUS LINE, SELECT 'UTILITIES', 'MCU STATUS LINE: OFF'.

Quick Menu

When connected to an MCU

MCU Services	Request Floor	View Site #	Take Chair
Quick Menu	This menu provides access to the most commonly used MCU functions.		
Request Floor	If REQUEST FLOOR is selected, REQUEST FLOOR will change to RELEASE FLOOR .		
Release Floor	If VIEW SITE# is selected, VIEW SITE# will change to END VIEW .		
Terminal Names			
View Site #			
End View			
Chair Control			
Previous Menu			



PRESS ANY QUICK KEY WHEN IN A MULTIPOINT CONFERENCE TO ACTIVATE THE QUICK MENU.

Selecting **TAKE CHAIR** will send a request to take chair. If granted, the **QUICK KEYS** will be:

Floor To Site #	View Site #	Release Chair
-----------------	-------------	---------------

If **FLOOR TO SITE#** is selected, FLOOR TO SITE# will change to **REL. FLOOR TO SITE**.

If **RELEASE CHAIR** is selected, you will return to the original QUICK MENU.

When MultiSite^{TF}

Request Floor	Floor To Site #	Voice Switched
---------------	-----------------	----------------

If **VOICE SWITCHED** is selected, VOICE SWITCHED will change to **CONT. PRESENCE**. This setting can also be changed in the 'UTILITIES' menu.

Request floor

When requesting the floor, the MCU will broadcast your video in full screen to all other participants in the conference. If the MCU conference has a chairman, a floor request is sent to the chairman.

You will remain 'On Air' until either you select **RELEASE FLOOR** or the chairman decides to release the floor to another participant.



FLOOR WILL AUTOMATICALLY BE REQUESTED WHEN SENDING A SNAPSHOT OR SELECTING THE DOC CAM OR PC VIDEO SOURCES.

Release floor

Choose **RELEASE FLOOR** to take you 'Off Air'. You should do this when you wish to make the floor available to the other participants in the conference.

Terminal Names

Allows you to see the site numbers or name (if supported) of other sites connected in the conference.

View site # *

Allows you to view any participant in the conference other than the participant currently 'On Air'.

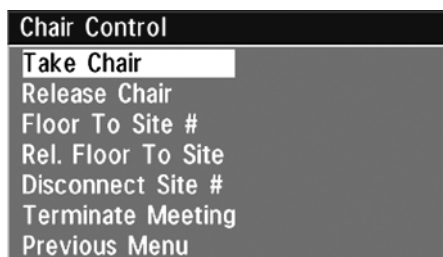


'VIEW SITE' AND 'END VIEW' CAN BE USED BY ALL CONFERENCE PARTICIPANTS.

End view

Allows you to stop viewing the site previously chosen with **VIEW SITE #**, and returns your view to the site that is currently 'On Air'.

Chair control *



You select **CHAIR CONTROL** and **TAKE CHAIR** to assume the role of chairman of the meeting. As chairman, you control which site you and the other sites see.

TAKE CHAIR: Allows you to request chairmanship of the conference. If no one else is currently chairman the MCU will give you the chair.



IN ORDER TO MAKE USE OF CHAIR CONTROL FEATURES THE MCU MUST SUPPORT CHAIR CONTROL (H..243).

RELEASE CHAIR: Allows you to relinquish the privileges of chairmanship of the conference.

FLOOR TO SITE #: Allows the chairman to select which of the conference participants is to be broadcast to all other participants.

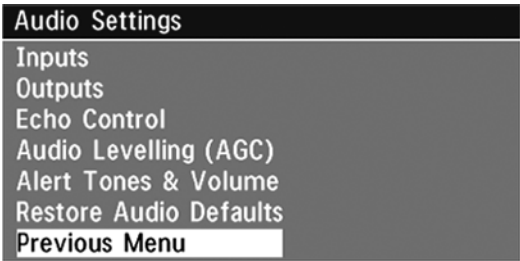
RELEASE FLOOR TO SITE: Allows the chairman to release the floor.

DISCONNECT SITE #: Allows the chairman to disconnect any participant in the conference.

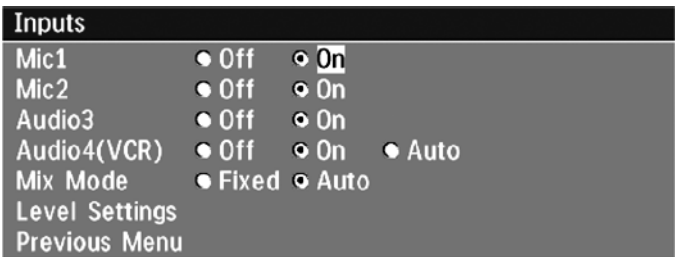
TERMINATE MEETING: Allows the chairman to terminate the conference altogether.

* NOT SUPPORTED BY THE MULTISITETM

Audio Settings



Audio Inputs



By default, all inputs are enabled. Just plug in an audio source and it is active. Audio inputs that are on will automatically be mixed. Select OFF to prevent audio/noise from unused inputs or if you want to disable a specific input. The activated audio sources are stored on presets.

Mic 1 and **2** are intended for electret type microphones. The microphone inputs are balanced with 11V phantom power.

AUDIO INPUT 3 is intended for connection to external playback devices.

As there is no acoustic echo canceller on this input it should not be connected to any microphones. The audio entering this input will be heard from the local speaker.

AUDIO INPUT 4 is intended for connection to a VCR. It can also be connected to other external playback devices. As there is no acoustic echo canceller on this input it should not be connected to any microphones. The audio source connected to this input will be heard from the local speaker. If 'Auto' is selected, the audio from the VCR will only be heard when VCR is selected as video source.

Mix Mode

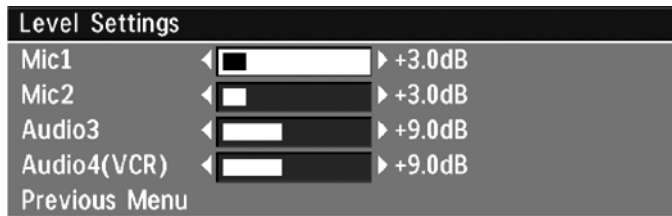
'Auto' automatically adjusts the weighting of each microphone to obtain the best possible audio and minimizes the background noise. 'Auto' will also attenuate the VCR audio level when someone talks into a microphone. 'Fixed' will maintain a constant weighting for all microphones.



EXTERNAL MIXER

WHEN USING AN EXTERNAL MIXER, IT IS VERY IMPORTANT THAT THIS IS A FIXED MIXER. AUTOMATIC, SMART AND OTHER TYPES OF ADAPTIVE MIXERS MIGHT CAUSE THE ECHO CANCELLER TO MALFUNCTION.

Level Settings



Adjust the audio input levels according to which external audio equipment is connected. The on-screen audio level indicator will make it easier to set the correct input level settings. The input level should be adjusted so that the average level reaches the preferred level marker.

The audio inputs are adjustable in steps of 1.5 dB from 0 dB to 22.5 dB.

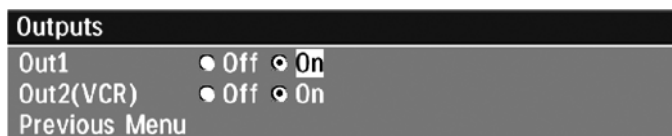
The default levels for **Mic 1** and **2** are set for use with an Audio Technica AT871 microphone in an average videoconferencing room. The gain can be adjusted correctly for a wide range of microphones.

A few examples of microphone levels are:

Audio Technica AT871	+3dB (default with system)
Audio Technica AT851R	+7dB
TANDBERG AudioScience	+19.5dB

Audio inputs 3 and 4 are set to a default level which is adhered to by most manufacturers of audiovisual equipment and is a level at which most audiovisual equipment (CD-players, VCRs) will work.

Audio Outputs



Audio out 1 is intended for connection to televisions or audio amplifiers.

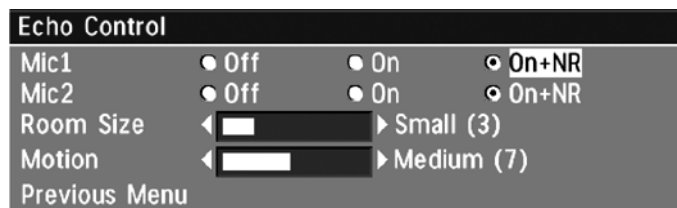
Audio out 2 is intended for connection to a VCR or other recording equipment. The signal is a mix of audio from far end and local end.

If an output is OFF, no audio will be sent to that output.



NEVER CONNECT AUDIO OUT 2 TO A LOUDSPEAKER PLACED IN THE SAME ROOM AS THE MICROPHONES CONNECTED TO THE SYSTEM. DOING THIS WILL CAUSE "HOWLING" AND POSSIBLE DAMAGE TO THE SPEAKER SYSTEM.

Echo Control



Each of the 2 microphone inputs have a separate echo canceller. One echo canceller per input provides more sophisticated control than having one common canceller for all microphones.

Echo control is normally set to ON to prevent the far end from hearing their own audio. Once selected, echo cancellation is active at all times. The echo canceller continuously adjusts itself to the audio characteristics of the room and compensates for any changes it detects in the audio environment. If the changes in the audio conditions are very significant the echo canceller may take a second or two to readjust.

You can choose to switch off the echo canceller for the available audio sources.



ECHO CONTROL SHOULD BE SWITCHED '**OFF**' IF EXTERNAL ECHO CANCELLATION OR PLAYBACK EQUIPMENT IS USED. IT IS YOUR ECHO CANCELLER THAT IMPROVES THE AUDIO QUALITY EXPERIENCED BY THE OTHER SITE. WHEN YOU HEAR AN ECHO OF YOUR OWN AUDIO IT IS MOST LIKELY THE FAR END'S ECHO CANCELLER THAT IS MALFUNCTIONING.

Noise Reduction (NR)

In addition to echo cancellation, the system has built-in noise reduction (NR).

NR reduces constant background noise (e.g. noise from air-conditioning systems, cooling fans etc.). In addition, a highpass filter (Humfilter) reduces very low frequency noise.

Choose **ON+NR** to activate both 'Echo Control' and 'Noise Reduction'.

Room Size

This setting allows optimization of the echo canceller to the acoustic size of the room. Hard walls, many windows etc. might require higher settings than expected. Carpets, curtains etc. might require lower settings. Adjust the setting (on the far end) if one of the following symptoms occur:

- There is still some echo of your own audio. Increase the setting.
- The system adapts slowly to acoustic changes in the room. Decrease the setting.

After a change, the system will need a few seconds to readjust.

Motion

If you experience echo caused by movements in the room, increase the **MOTION** value.

Automatic Gain Control (AGC) Settings

Audio Levelling (AGC)	
Mic1-2	<input type="radio"/> Off <input checked="" type="radio"/> On
Audio3	<input type="radio"/> Off <input checked="" type="radio"/> On
Audio4(VCR)	<input type="radio"/> Off <input checked="" type="radio"/> On
Received Audio	<input checked="" type="radio"/> Off <input type="radio"/> On
Previous Menu	

Select **ON** to allow automatic adjustments (Automatic Gain Control) of audio levels. When **ON**, the AGC maintains the audio signal level at a fixed value by attenuating strong signals and amplifying weak signals. Very weak signals, i.e. noise alone, will not be amplified.

EXAMPLE: IN MOST CONFERENCES, THE PARTICIPANTS WILL SPEAK AT DIFFERENT LEVELS, AND BE AT DIFFERENT DISTANCES FROM THE MICROPHONES. AS A RESULT, SOME OF THE PARTICIPANTS WOULD BE HARDER TO HEAR THAN OTHERS. THE AGC CORRECTS THIS PROBLEM BY AUTOMATICALLY INCREASING THE MICROPHONE LEVELS WHEN “QUIET” OR “DISTANT” PEOPLE SPEAK, AND BY DECREASING THE MICROPHONE LEVELS WHEN “LOUDER” PEOPLE SPEAK.



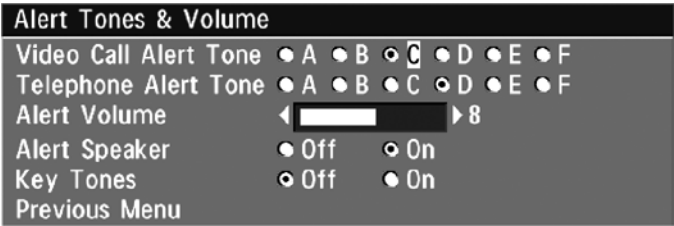
TO ENSURE CORRECT BEHAVIOR OF THE AGC, IT IS CRUCIAL THAT THE LEVELS ON THE INPUT CONNECTORS ARE ADJUSTED CORRECTLY USING THE AUDIO INPUT LEVEL SETTINGS. THE AGC WILL NOT COMPENSATE FOR SEVERE MALADJUSTMENT OF INPUT LEVELS.

When applying a weak signal in the presence of strong background noise, the AGC might amplify the background noise as well as the signal. Therefore, in noisy environments, it is advisable to turn the AGC off.

Tips for improving the echo canceller performance:

- Place all microphones as far as possible from the loudspeaker. Minimum loudspeaker-microphone distance should be 1 meter.
- Place all microphones as close as possible to the persons speaking. By using several microphones, the ratio distance loudspeaker-to-mic/mic-to-speaker can be increased. Increasing this ratio improves the echo canceller performance. Avoid distances above two meters from any participant to his/her closest microphone. If necessary, use several microphones. Also avoid placing microphones less than one meter from any person.
- Place all microphones as far as possible from noise sources.
- Reduce the volume setting. Ensure that the loudspeaker does not distort the audio.
- The echo canceller tries to estimate the echo path from the speaker system to the microphones. Moving objects change this path, therefore try to avoid moving objects. Be especially aware of large objects and objects placed close to either the microphone or the speaker system as these objects will cause severe changes to the echo path.
- Avoid putting paper sheets etc. on the microphone.
- Avoid moving the microphone or loudspeaker.
- In the event of poor echo cancelling, allow the canceller to adapt. After each change, the echo canceller requires a few seconds to adapt. Do not change the settings without allowing the echo canceller to adapt to the new audio environment.
- In the presence of low frequency noise, enable the noise reduction (NR).

Alert Tones & Volume



To help distinguish between incoming video calls and ordinary telephone calls, different ringing tones may be selected. You may also select different volume levels for the ringing tone.

Alert Speaker

The system also has an internal, call alerting speaker.

- ON The internal speaker will warn you of an incoming call even though the monitor may not be switched on.

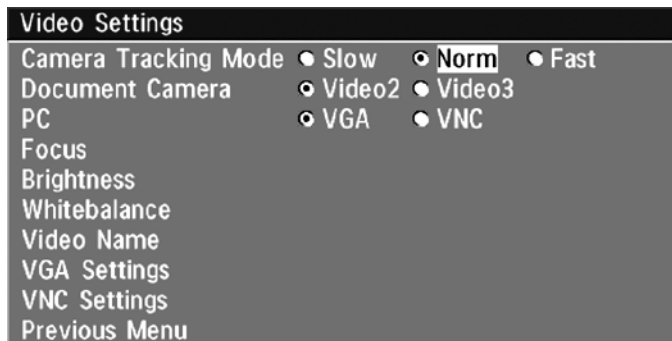
Key Tones

The Key Tones may be switched ON and OFF.

Restore Audio Defaults

There are many audio settings and the codec could easily be made unusable by configuring these by mistake. It is therefore possible to return all audio settings to their factory default settings by using 'Restore Audio Defaults'.

Video Settings



Camera Tracking Mode

Select the camera tracking mode:

- | | |
|------|---|
| SLOW | The system waits a while before zooming in on a single person speaking. Suitable when wide-angle images are preferred over close-up images. |
| NORM | Should be used in regular meetings. |
| FAST | The system quickly zooms in on a single person speaking. Suitable when close-ups are preferred over wide-angle images. |

Document Camera

Set the **DOCUMENT CAMERA** to **VIDEO 2**. Users of a document camera with an S-video output can configure the system to activate an S-video input when pressing 'doc cam' on the remote control.

- | | |
|--------|---|
| VIDEO2 | Video Input 2 (S-video) will be activated when pressing DOC CAM on the remote control. |
| VIDEO3 | Video Input 3 (Composite) will be activated when pressing DOC CAM on the remote control. |



THIS SETTING MUST REMAIN ON VIDEO 2 FOR THE DOC CAM TO TRANSMIT.

IT IS NOT RECOMMENDED TO SET VIDEO 3 AS THE DOC CAM SOURCE AS VIDEO 3 IS CONFIGURED TO TRANSMIT THE INTEGRATED CAMERA SIGNAL WHEN AUX IS PRESSED ON THE REMOTE.

PC*

Configure what should be activated when pressing **PC**.

- | | |
|-----|---|
| VGA | Pressing PC will activate the VGA input on the system (default). |
| VNC | Pressing PC will use VNC to show images from your PC (see 'VNC SETTINGS' for further information). |

Focus

To manually adjust the focus select '**Manual**' and use the arrow keys to adjust.

* REQUIRES OPTION 'PRESENTER'. TO CHECK WHICH OPTIONS ARE INSTALLED, SEE THE 'SYSTEM INFO' MENU IN 'DIAGNOSTICS'.

Whitebalance

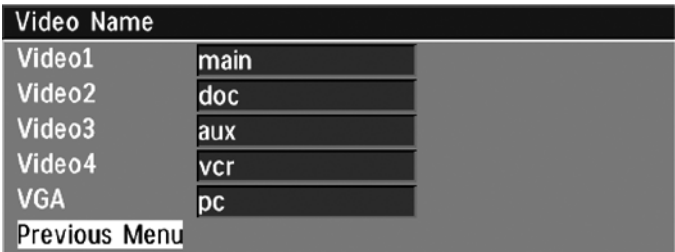
In Auto mode the whitebalance is continuously updated. To update the whitebalance manually, select **'Manual'** and press **OK**.



A WHITE OBJECT SHOULD BE HELD IN FRONT OF THE CAMERA A FEW SECONDS BEFORE AND AFTER SELECTING MANUAL WHITEBALANCE.

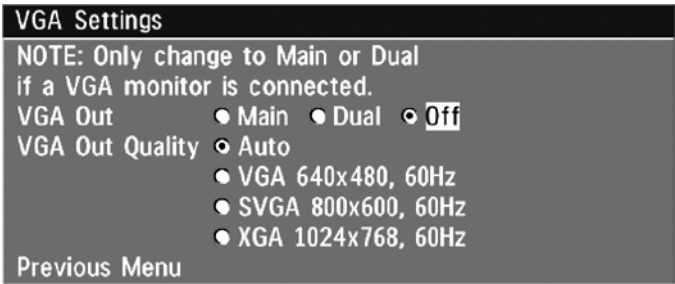
Video Name

As a default each video input corresponds to the name used on the remote control.



To edit the name, use the **NUMBER KEYS** on the remote control.

VGA Settings



VGA Out

To enhance the local video quality, a VGA monitor may be connected.

- | | |
|------|---|
| MAIN | Should be used if you want to use a VGA monitor as your main monitor. Video outputs 1 and 2 will be disabled. |
| DUAL | Should be used if you want to use a VGA monitor as your dual monitor. Video output 3 will be disabled. |
| OFF | Should be used if you want to use a TV monitor as your main monitor. |

VGA Out Quality

VGA Out Quality changes the resolution of the VGA signal available on the 'VGA Out' connector at the rear of the codec.

- | | |
|------|--|
| AUTO | Will sense the resolution on the 'VGA input' port and use the same resolution on the 'VGA Out' port. |
| VGA | Will force 'VGA out' to VGA (640X480). |
| SVGA | Will force 'VGA out' to SVGA (800X600). |
| XGA | Will force 'VGA out' to XGA (1024X768). |

VNC Settings *

Address

The IP-address of the PC with the VNC software installed. To find the IP-address of the PC, select '**Command Prompt**' from the Startup-menu. Type '**ipconfig**' and press **ENTER**.

Display Number

The display number for VNC is 0 and upwards. If you are using WinVNC, double-click on the icon on the toolbar to view 'WinVNC properties'. This number should correspond with 'Display Number' in this menu.

Password

Enter the same password as specified in WinVNC properties. The password will be shown as asterisk signs (*) the next time you enter the menu.

Start using VNC

To activate VNC, press **PC** on the remote control. See also 'PC SoftPresenter' section for further information.



VNC SERVER SOFTWARE SETUP

- BOTH THE PC AND THE VIDEOCONFERENCING SYSTEM MUST BE CONNECTED TO THE SAME LAN.
- A VNC SERVER MUST BE INSTALLED ON THE PC. FREE SOFTWARE CAN BE DOWNLOADED FROM [HTTP://WWW.UK.RESEARCH.ATT.COM/VNC](http://WWW.UK.RESEARCH.ATT.COM/VNC)
- INSTALL THE SOFTWARE BY RUNNING THE DOWNLOADED FILE.
- TO CONFIGURE THE VNC SERVER SOFTWARE :
- SELECT 'ACCEPT SOCKET CONNECTIONS'.
- SELECT 'AUTO' FOR 'DISPLAY NUMBER'. 'DISPLAY NUMBER' IN THE SYSTEM MUST THEN HAVE THE VALUE 0.
- ENTER A PASSWORD IN THE 'PASSWORD'-FIELD. MUST CORRESPOND WITH THE 'VNC SETTINGS' ON YOUR SYSTEM.

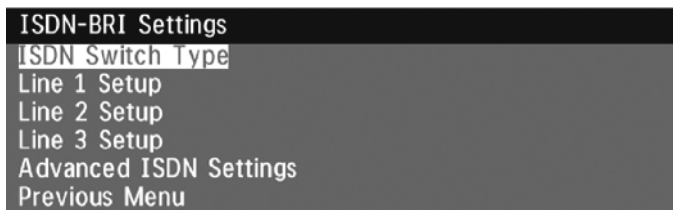
Terminal Settings

This menu provides basic network setup for the unit and should be used when installing the system.

* REQUIRES OPTION 'PRESENTER'. TO CHECK WHICH OPTIONS ARE INSTALLED, SEE THE 'SYSTEM INFO' MENU IN 'DIAGNOSTICS'.

Network Configuration

ISDN-BRI Settings



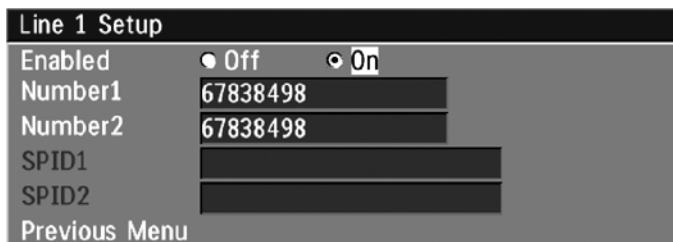
ISDN switch type

Select the type of ISDN network connected to your unit.



Line setup

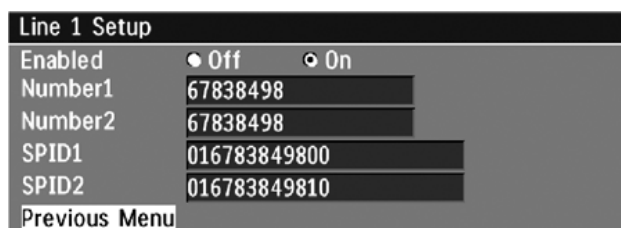
This menu allows you to program the numbers associated with your ISDN line.



If you want to use this ISDN line, you need to set **'Enabled: On'** and enter the numbers of your ISDN line. If some of the ISDN lines are not to be used, set **'Enabled: Off'**. Line 1 should always be enabled.

National ISDN and AT&T Custom ISDN might require SPID numbers associated with your ISDN numbers. If you have received two different SPID numbers for each ISDN line from your telephone company, you must program both.

EXAMPLE: NUMBERS	SPIDS
ISDN BRI 1:	67838498 016783849800
	67838498 016783849810
ISDN BRI 2:	23478060 012347806000
	23478070 012347807000
ISDN BRI 3:	23478420 012347842000



SOME SOFTWARE VERSIONS DO NOT SUPPORT 3 ISDN LINES, THEREFORE SOME OF THE LINE SETUP LINES MAY BE GRAYED OUT.



IF NATIONAL ISDN IS SELECTED, PRESS THE QUICK KEY **'AUTO BRI CONFIG'** TO REQUEST AN AUTOMATIC CONFIGURATION OF THE LINE & SPID SETTINGS (SWITCH MUST SUPPORT GR-2941-CORE).



MANDATORY ISDN-BRI SETTINGS: TO MAKE SURE YOUR SYSTEM WILL WORK PROPERLY USING ISDN-BRI, MAKE THE FOLLOWING SETTINGS:

- SET ISDN SWITCH TYPE
- ENTER ISDN LINE NUMBERS (+ SPIDS IF REQUIRED)
- DISABLE UNUSED LINES



1TR6 SHOULD ONLY BE USED IF YOU ARE OPERATING THE SYSTEM BEHIND A PABX.

Advanced ISDN settings

Advanced ISDN Settings

Subaddress

Validate Numbers (MSN)

Off

On

Parallel Dial

Off

On

Send Own Numbers

Off

On

Sending Complete

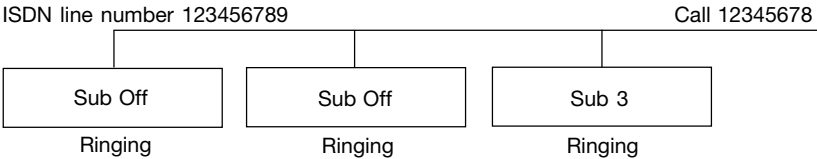
Off

On

Previous Menu

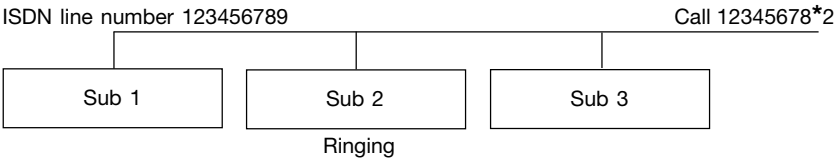
Subaddress

Using a subaddress enables you to connect up to eight ISDN terminals to the same ISDN telephone number and line. The terminals are addressed by using different subaddresses.



To call a terminal with a subaddress, separate the ISDN telephone number and the subaddress with a ‘*’.

EXAMPLE: 12345678*2 (UP TO FOUR DIGIT SUBADDRESSES ARE POSSIBLE)



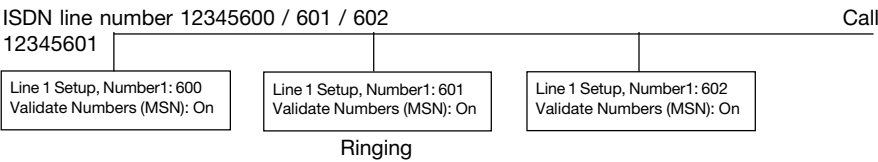
MSN (Multiple Subscriber Number)

The use of MSN (Multiple Subscriber Number) enables you to attach different ISDN terminals, with different numbers, to the same physical ISDN telephone line. If ‘**Validate Numbers**’ is set to **ON** only calls to those numbers specified in the Line Setup menus will be answered. This service can be ordered from your telephone company.



THIS SERVICE HAS LIMITED ACCESS ON SOME ISDN NETWORKS.

Parallel dial



- ON Channels will be dialed and connected in parallel when setting up a BONDING call.
- OFF Channels will be dialed one by one which may increase the dialing time.

Send Own Numbers

- ON The system will send its own numbers to the far end.
- OFF The system will not send its own numbers to the far end, but please note that the network may still send your numbers to the far end.

Sending Complete

- ON The system will send the ISDN message information element 'Sending Complete'.
- OFF The system will not send 'Sending Complete'.

LAN Settings

LAN Settings

Streaming Settings

H.323 Settings

IP Settings

Wireless LAN Settings

SNMP Settings

Previous Menu

Streaming*

Streaming Settings

Address

224 . 2 . 34 . 22

Address Port

22232

TTL/Router Hops

1 (1..255)

Streaming Source

☐ Auto

☒ Local

☐ Remote

Allow Remote Start

☒ Off

☐ On

Announcements

☒ Off

☐ On

Video rate (kbps)

◀

▶


64


Password

Previous Menu

Start Streaming

Back

 WHEN STREAMING, A MULTISITE[™] OR A DUOVIDEO[™] CALL CAN NOT BE MADE.

 AN ON-SCREEN INDICATOR IS SHOWN WHEN STREAMING IS ACTIVE (SEMITRANSSPARENT TEXT THAT SAYS STREAMING).

Address

Address is defined as the IP-address of a streaming client, streaming server or a multicast address. Giving an address in the range 224.0.0.1-239.255.255.255 will broadcast the stream to any host that has joined the specified multicast group. Specifying normal broadcast address 255.255.255.255 will broadcast to any members on the LAN.

Address Port

If several codecs are streaming to the same IP-address, different ports have to be used in order for the client to know which stream to receive. If the first codec streams on port 2240 and the second codec on port 2250, the client has to specify which port to listen to. Video is transmitted on the specified port, audio is transmitted on the port number 4 above the specified video port, in this case 2244 and 2254.

TTL/Router Hops

This is used for streaming data to limit how many routers the data should pass before it is rejected. If TTL is set to 2, data will not traverse more than 2 router hops.

* PLEASE CONTACT YOUR TANDBERG REPRESENTATIVE FOR FURTHER INFORMATION.

Streaming Source

AUTO	Enables streaming of both local and far end video. Selection of which site to be streamed is done using voice switching (the site that speaks is streamed).
LOCAL	Only the local video will be streamed.
REMOTE	Only the far end video will be streamed.

Local and far end audio is always streamed.

Allow Remote Start

ON	Streaming can be started from external user interfaces like the Web-browser or Telnet session.
OFF	Streaming can only be started from the videoconferencing system using the remote control, or by using the Dataport. This will prevent activation of streaming using Web browser or Telnet sessions.

Announcements

ON	The codec will announce to the network that it is streaming. This enables a streaming client (e.g. a PC) to connect to the codec's streaming session. Used by Cisco IP/TV.
OFF	No announcement packets will be transmitted.

Video Rate

Defines the Video streaming rate from the system. Range is 16kbps - 320kbps. In addition, audio (G.711) streaming rate is 64kbps, providing a maximum streaming rate of 384kbps.

Password

Set password so that only participants entering correct password will be able to view the streaming session. Entering a password will prevent unauthorized people from accessing the streaming session.

Start/Stop Streaming

By pressing the **QUICK KEY** labeled '**Start Streaming**', the Streaming session will start. To stop the stream, press the same **QUICK KEY**, which will be labeled '**Stop Streaming**' while the streaming-session is active. Pressing **DISCONNECT** will also stop the streaming session.

How to view streaming

After streaming is started, an easy way to view the streamed audio/video is to start your Web-browser and enter the IP-address of the streaming system. After the Web page of the codec is shown, click on '**Streaming**'. Alternatively, enter <http://<codec ip-address>/stream.sdp>.

H.323 Settings

H.323 Settings

E.164 Alias9151

Use Gatekeeper☐ Auto☒ Manual☐ Off

Gatekeeper IP10.0.0.30

H.323 Prefix9

Advanced H.323 Settings

Previous Menu

Registered to gatekeeper. 10.0.0.30:1719

RegisterBack

E.164 alias

This is the E.164 address of the codec. The E.164 address is equivalent to a telephone number, sometimes combined with access codes. Valid characters are 0-9,* and #.

When using a gatekeeper the codec will send a message to the gatekeeper containing both the E.164 address and the system name of the codec. The codec will not register with the gatekeeper if the E.164 alias is not set.

Use Gatekeeper

- AUTO
- The codec will automatically try to register on any available gatekeeper. If a gatekeeper responds to the request sent from the codec within 30 seconds this specific gatekeeper will be used. If no gatekeeper responds, the codec will not use a gatekeeper for making H.323 calls and hence an IP-address must be specified manually.
- MANUAL
- The codec will use a specific gatekeeper identified by 'Gatekeeper IP-address'.
- OFF
- The codec will not use a gatekeeper and an IP-address must be used in order to make an H.323 call.

Gatekeeper IP-address

This is the gatekeeper IP-address if you specify 'Use Gatekeeper: Manual'.

H.323 Prefix

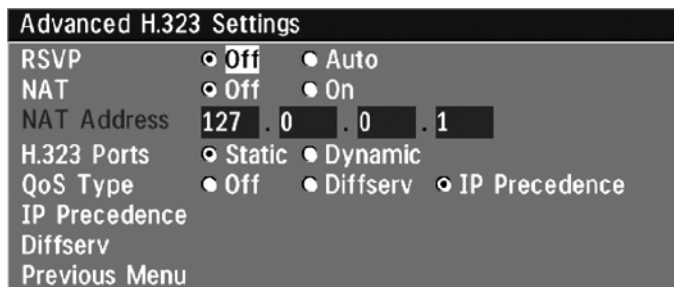
When dialing a number prefixed with digits specified by 'H.323 Prefix', and with 'Net: Auto', an H.323 call will be placed.

EXAMPLE H.323 PREFIX IS '555'. DIALING '55582' WITH 'NET:AUTO' WILL SELECT LAN.

Register

Pressing 'Register' will send a gatekeeper registration request. This request will also be sent when leaving the menu.

Advanced H.323 Settings



RSVP

- AUTO** Resource Reservation Protocol (RSVP) enables the endpoints to request the optimal amount of bandwidth for the duration of an IP video conference.
- OFF** Resource Reservation Protocol is switched off.

NAT

Network Address Translation (NAT) is used in small LAN's, often home offices, when a PC and a videoconferencing system is connected to a router with NAT support. NAT support in the videoconferencing system enables proper exchange of audio/video data when connected to an external videoconferencing system (when the IP traffic goes through an NAT router).

When NAT is On, the NAT Server Address will be shown in the startup-menu: 'My IP Address: 10.0.2.1 (NAT)'

NAT Address

This must be the external/global IP-address to the router with NAT support. Packets sent to the router will then be routed to the codec.

In the router, the following ports must be routed to the codec's IP-address:

- Port 1720
- Port 5555-5560
- Port 2326-2365

Please contact your TANDBERG representative for further information.

H.323 Ports

- STATIC** When selecting static H.323 ports for TCP connections the ports 5555 or 5556 will be used for Q.931 and H.245 respectively.
- DYNAMIC** The operating system will allocate which ports to use when opening a TCP connection.. The reason for doing this is to avoid using the same ports for subsequent calls as some firewalls consider this as a sign of attack.

QoS Type

- OFF

No QoS is used
- DIFFSERV

Diffserv QoS method is used. Please see below for details.
- IP PRECEDENCE

IP Precedence QoS method is used. Please see below for details.

IP Precedence

Used to define which priority audio, video, data and signalling should have in the network. Higher numbers indicate higher priority. The priority ranges from 0(off) - 7 for each type of packets .

IP Precedence

Audio

Auto

Video

Auto

Data

Auto

Signaling

Auto

IP Type of Service (TOS)

Delay

Throughput

Off

Reliability

Cost

Previous Menu

Auto will provide the following priority:

- Audio

4
- Video

4
- Data

3
- Signalling

6

IP Type of Service (TOS)

Helps a router select a routing path when multiple paths are available.

- Delay

Tells the router to minimize the delay
- Throughput

Tells the router to maximize the throughput
- Reliability

Tells the router to maximize the reliability
- Cost

Tells the router to minimize the cost

Diffserv

Used to define which priority Audio, Video, Data and Signaling packets should have in an IP network. The priority ranges from 0 to 63 for each type of packets.

Diffserv

Audio

0

(0..63)

Video

0

(0..63)

Data

0

(0..63)

Signaling

0

(0..63)

Previous Menu

IP Settings

IP Settings

IP-assignment

☒ DHCP ☐ Static

IP-address

10

0

5

151

IP-subnet mask

255

255

0

0

Gateway

10

0

0

1

Ethernet Speed

☒ 10/Half ☐ 10/Full
☐ 100/Half ☐ 100/Full ☒ Auto

Previous Menu



CHANGES IN THIS MENU WILL NOT HAVE ANY EFFECT BEFORE THE SYSTEM IS RESTARTED.

IP-assignment

DHCP (Dynamic Host Configuration Protocol) can be selected when a DHCP server is present.

- DHCP

IP-address, IP-subnet mask and Gateway are not used because these parameters are assigned by the DHCP server.
- STATIC

The codec's IP-address and IP-subnet mask must be specified in the IP-address field.

IP-address

IP-address defines the network address of the codec. This address is only used in static mode. In DHCP-mode, the assigned IP-address can be found on the Welcome Menu.

IP-subnet mask

IP-subnet mask defines the type of network. This address is only used in static mode. Your LAN-administrator will provide the correct value for this field.

Gateway

When using DHCP, the default gateway will be set automatically. If the LAN utilizes static IP addresses, IP address, subnet mask, and default gateway must be specified by the LAN administrator.

Ethernet Speed

- AUTO

The codec will auto-detect the speed/duplex on the LAN.
- 10/HALF

The codec will connect to the LAN using 10Mbps speed/Half Duplex.
- 10/FULL

10 Mbps speed/Full Duplex.
- 100/HALF

100 Mbps speed/Half Duplex.
- 100/FULL

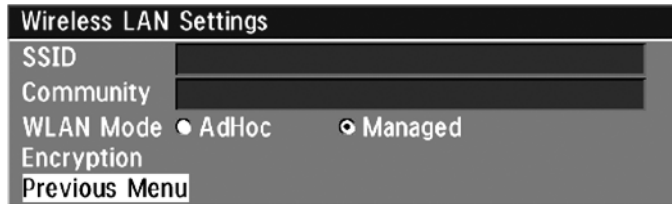
100 Mbps speed/Full Duplex.

Restart

Pressing the QUICK KEY '**Restart**' will restart your system without having to use the ON/OFF switch on the codec. If IP-assignment is changed, it is sufficient to use this QUICK KEY to restart the system.

Wireless LAN Settings

Please refer to **APPENDIX 4: INSTALLING A WIRELESS LAN CARD** for important instructions.



THE PC CARD/PCMCIA-CARD USED MUST COMPLY WITH THE RELEVANT REGULATIONS FOR SUCH CARDS IN THE COUNTRY WHERE IT IS USED. THE UNIT MUST BE SUPPLIED BY POWER SUPPLY (AC-DC ADAPTER) POWERBox SPN-270-12, WHICH COMPLIES WITH THE REQUIREMENTS FOR LIMITED POWER SOURCE ACCORDING TO IEC/EN 60950

SSID (Service Set Identification)

Example "WLANNETWORK"

Defines a local network id for this wireless region. It must be the same for all end points and the access point. An endpoint will find the access point if the SSID is correct, however if the encryption key is faulty it will not transmit any data.

Community (optional)

Community can be used when connecting to an access point where the SSID is the same.

EXAMPLE "UNIT2"

WLAN Mode

- | | |
|---------|--|
| ADHOC | Used when not communicating with an access point. |
| MANAGED | Used when communication is made through an access point. |

Restart

Make sure the corresponding settings are programmed into the access point. Press '**Restart**' in order to activate the settings.

Required cards

- Compaq WL110 11 Mbps Wireless LAN
- Lucent Orinoco 11 Mbit/s SILVER
- Lucent Orinoco 11 Mbit/s GOLD
- Cisco Aironet 350 series (AIR-PCM 350 series)
- Enterasys Networks RoamAbout 802.11 DS High Rate
- Melco Buffalo WLI-PCM-L11G

Recommended access point

- Compaq WL410 base station

Encryption

Encryption

Encryption ☐ Off ☒ 64 bit ☐ 128 bit

Use Key ☒ 1 ☐ 2 ☐ 3 ☐ 4

Key 1

Key 2

Key 3

Key 4

Previous Menu



ENCRYPTION USING HEX NUMBERS: THE 64-BIT KEYS CAN CONSIST OF 10 HEXADECI-MAL DIGITS. EXAMPLE: "DE01AD4DBE". THE 128-BIT KEY CAN CONSIST OF 26 HEX NUMBERS.

Encryption

Select if you want to encrypt your wireless LAN connection.

Use Key

Select which of the keys shown below you want to use.

Key 1-4

The 64-bit key can consist of a leading star (*) and 5 characters.
The 128-bit key can consist of a leading star (*) and 13 characters.

Start with a "*" and then the text.

EXAMPLE 128 BIT KEY: *SECRETKEYHOME.



INCREASED ENCRYPTION LEVEL WILL DECREASE PERFORMANCE.

SNMP Settings

SNMP Settings

SNMP Trap Host 10 . 0 . 5 . 100

SNMP Trap Host 127 . 0 . 0 . 1

SNMP Trap Host 127 . 0 . 0 . 1

SNMP Community

Previous Menu

SNMP Trap Host

SNMP (Simple Network Management Protocol) is used for monitoring and configuring different units in a network. The codec's **SNMP Agent** responds to requests from **SNMP Managers** (a PC program etc.). **SNMP traps** are generated by the agent to inform the manager about important events.

SNMP Trap Host identifies the IP-address of the SNMP manager.

Traps can be sent to multiple SNMP Trap Hosts. Enter the IP address of up to three SNMP managers. All traps will then be sent to the hosts listed.

SNMP Community

SNMP Community names are used to authenticate SNMP requests. SNMP requests must have a 'password' in order to receive a response from the SNMP agent in the codec.



THE SNMP COMMUNITY NAME IS CASE SENSITIVE.

Call Settings

Call Settings

Incoming MCU Calls	<input type="radio"/> Off	<input type="radio"/> On	
Incoming Telephone Calls	<input type="radio"/> Off	<input type="radio"/> On	
Fallback to Telephony	<input type="radio"/> Off	<input type="radio"/> On	
Access Code	<input type="radio"/> Off	<input type="radio"/> On	
Encryption	<input type="radio"/> Off	<input type="radio"/> Auto	
Encryption Mode	<input type="radio"/> Auto	<input type="radio"/> AES	<input type="radio"/> DES
Max Call Length (min, 0=Off)	0		
Network Profiles			
Previous Menu			

Incoming MCU calls

- ON

When you are in a call, the system will provide visual and audible indications of an incoming call and ask you to accept/reject the call.
- OFF

The system will not accept incoming calls when you are in a call.

Incoming telephone calls

- ON

The system will accept incoming telephone calls.
- OFF

The system will not accept incoming telephone calls. This is useful to prevent incoming calls from systems other than videoconferencing systems.

Fallback to telephony

- ON

Enables fallback from video calls to telephony/speech calls.
- OFF

Disables fallback.

Access Code

Access Code

Enter access code and press OK

OK

Cancel

- ON

When pressing CONNECT or any number to make a call, an **'Access Code'** menu will be shown. The user will then have to enter the correct access code in order to make a call.
- OFF

No access code is necessary to make a call.

Encryption (Secure Conference)*

AUTO The system will try to set up calls using encryption. Point to point calls: If the far end system supports encryption, the call will be encrypted. If not, the call will proceed without encryption.

ISDN MultiSite^{TF} calls: In order to have encrypted MultiSite^{TF} calls on ISDN, all sites must support encryption. The padlock symbol will indicate encryption mode (AES* or DES). If there is a mix of AES* and DES encryption, only the symbol for DES encryption (single padlock) will be displayed.

IP MultiSite^{TF} calls: Sites supporting encryption will be encrypted and sites not supporting encryption will not be encrypted. The padlock symbol will be shown on the MultiSite^{TF} if all sites support encryption. The padlock symbol will be shown on the site connected to the MultiSite^{TF} if this connection to the MultiSite^{TF} is encrypted.

If the far end supports encryption, the systems will initiate encryption after the call is connected (an 'open padlock' symbol will be displayed). When encryption has been established, a 'closed padlock' symbol will be displayed.

OFF The system will not send or receive encrypted data.

Technical encryption information like encryption algorithm and encryption check code can be found in the 'Call Status' menu.



BOTH AES* AND DES ENCRYPTION IS SUPPORTED FOR MIXED ISDN/IP CALLS. IN ADDITION AES* -AND DES ENCRYPTED SITES CAN BE CONNECTED AT THE SAME TIME.

Encryption Mode

AUTO The system will try to use the most secure encryption - AES*, dependent on the capabilities of the other sites. If AES* encryption is not supported by all the other sites, DES encryption will be tried.

AES* The system will try to use AES* with 128 bits encryption when setting up ISDN or IP calls. If AES* is not supported by all other sites, no other type of encryption will be initiated.

DES The system will always try to set up the call using DES with 56 bits encryption on ISDN and IP. If DES is not supported by all other sites, no other type of encryption will be initiated.



THE MULTISITE CAN RUN 4 ENCRYPTED SITES AT 128 KBPS AND 3 ENCRYPTED SITES AT 256KBPS.

Max Call Length

This feature will automatically end both incoming and outgoing calls when the call time exceeds the 'Max Call Length' specified.

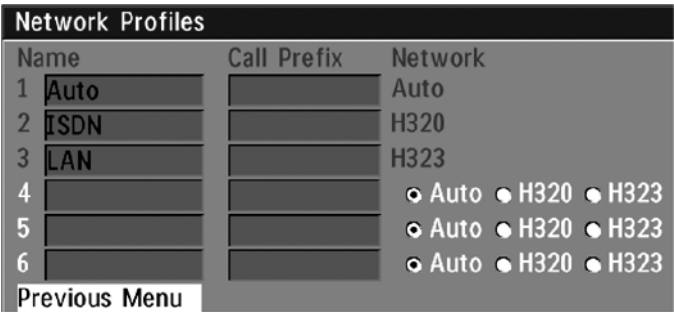
'Max Call Length' can have the following values: 0-999(minutes), where 0 is OFF.

A few minutes before the specified time is reached, a QUICK KEY menu will appear. Users will be asked if he/she wants to extend the specified 'Max Call Length':



Network Profiles

This menu defines the settings listed when pressing the QUICK KEY 'Net:' while in the dial menu.



This menu consists of 6 network profiles, a prefix can be added for each profile. If you add a prefix to a profile, this prefix will automatically be added to the number being dialed.

EXAMPLE 0 IS ADDED AS A CALL PREFIX TO THE 2ND PROFILE, ISDN. IF YOU ENTER 12345678 IN THE DIAL MENU AND SELECT 'ISDN', THE NUMBER DIALED WILL BE 012345678.

Using the three last profiles you can enter the name of a profile, prefix and network selection. This is useful if you have a fixed prefix for your service provider.

Dataport configuration

The system provides one standard RS232 serial port to allow a computer to be connected for data transfer and control purposes.

Dataport 1

If you wish to connect a PC to Dataport 1, you must ensure that the PC and the system are identically configured. The available settings for Dataport 1 supports 4 different modes:



WHEN CONNECTING TO A PC THE CONNECTING CABLE *MUST* BE A STRAIGHT THROUGH RS232 CABLE.

Data mode

Provides a transparent data channel.

Data Port 1			
Baudrate	<input type="radio"/> 1200	<input type="radio"/> 2400	<input type="radio"/> 4800
	<input type="radio"/> 9600	<input type="radio"/> 19200	<input checked="" type="radio"/> 38400
Parity	<input type="radio"/> None	<input type="radio"/> Odd	<input type="radio"/> Even
Databits	<input type="radio"/> 7	<input type="radio"/> 8	
Stopbits	<input type="radio"/> 1	<input type="radio"/> 2	
Mode	<input type="radio"/> Data	<input type="radio"/> Control	<input type="radio"/> Modem
	<input type="radio"/> T120		
Data Port 2			
Previous Menu			

This channel can be used for many different purposes such as file transfer, application sharing and more. When using this mode, it is necessary to have a TANDBERG system at the far end.

Control mode

The control interface provided by the Dataport supports a subset of the Hayes command set as well as a comprehensive set of system specific commands.

This mode maintains communication with the Dataport's command interpreter at all times. All features available from the hand-held remote control can be accessed through the dataport.

Modem

Allows you to control the system externally via a PC as in Control Mode. Once a call is established, Dataport 1 will automatically switch to Data mode. When the call disconnects, Dataport 1 switches back to Control Mode.

T.120

Provides a data channel supporting the T.120 standard for data communication. Using T.120 software on your PC, you can communicate with other T.120 systems using your PC and your system.

Data Port 2			
Baudrate	<input type="radio"/> 1200	<input type="radio"/> 2400	<input type="radio"/> 4800
	<input type="radio"/> 9600	<input type="radio"/> 19200	<input type="radio"/> 38400
Parity	<input type="radio"/> None	<input type="radio"/> Odd	<input type="radio"/> Even
Databits	<input type="radio"/> 7	<input type="radio"/> 8	
Stopbits	<input type="radio"/> 1	<input type="radio"/> 2	
Mode	<input type="radio"/> VISCA	<input type="radio"/> Auto	
Previous Menu			

Dataport 2

Dataport 2 is dedicated to the main camera and will not be available in standard configuration.

The Codec will automatically detect WAVE cameras. If you are using a camera supporting the VISCA protocol, select **'Mode: VISCA'**. The Dataport 2 settings will then be enabled.

If **'Mode: Auto'** and no camera is connected to the Dataport 2, the Baudrate, Parity, Databits and Stopbits settings will be enabled.

Language



The system supports 11 different languages for its on-screen menus.

Select the preferred language, and then press **OK** to save.

Software Options



The system requires a valid option key to activate Security (contains Secure Conference AES*), MultiSite^{TF} and/or Presenter functionality.

A restart of the system is required after entering a new option key. If the option key is invalid, the original key will be used.

The following options are available

- 1. No option
- 2. NPP (Presenter)
- 3. MultiSite^{TF} + NPP
- 4. Security + NPP
- 5. Security + NPP + MultiSite^{TF}

Diagnostics



Allows testing of individual system components and displays the current system settings.

System info

Select '**System Info**' to view system numbers, line status, software version and other useful information.

Channel status

Comprehensive information about the call progress is available through the **'Channel Status'** window. This window indicates the various stages each B-channel goes through while establishing a connection.

Status - BRI	Comments
Idle	the channel is idle
Calling	when calling — the network has acknowledged the call
Connected	when connection is established
Sync	when the channels are synchronized
Active	when all available channels are connected
Releasing	waiting for the network to confirm a release of the call
Released	when disconnected - the network has acknowledged the disconnection

Channel Status		
	Idle.	
1	B1	Idle
	B2	Idle
2	B1	Disabled
	B2	Disabled
3	B1	Disabled
	B2	Disabled
<div> <div>Call Status</div> <div>Back</div> </div>		



PRESS **MENU** AND THEN **'CALL STATUS'** TO BRING THIS MENU UP WHEN NOT IN THE MENU SYSTEM.

The numbers used to call out to the far end are shown in the window. If an error occurs a cause code will be displayed on the right hand side of the window.

Cause codes

The most common cause codes (for ISDN) are:

- 1 Unallocated (unassigned) number
- 2 No route to specified transit network (WAN)
- 16 Normal clearing
- 17 User busy
- 18 No user responding
- 21 Call rejected
- 28 Invalid number format (incomplete number)
- 29 Facility rejected
- 31 Normal, unspecified
- 34 No circuit/channel available
- 41 Temporary failure
- 58 Bearer capability not presently available
- 65 Bearer service not implemented
- 69 Requested facility not implemented
- 81 Invalid call reference value
- 88 Incompatible destination
- 100 Invalid information element contents
- 102 Recovery on timer expiry
- 127 Internetworking, unspecified
- 255 TANDBERG specific. undefined cause code

Call status

Comprehensive information about the call is available through the ‘Call Status’ window. The menu has two columns, one for transmitted and one for received audio/video/data information. If DuoVideo^{TF} or MultiSite^{TF} is used, pressing the LEFT/RIGHT KEYS will show one page per connected site.

Calls: H320	Transmit	Receive
System Name: 8620		
Call rate (kbps)	384.0	384.0
Video protocol	H263+	Off
Audio protocol	G722	G722
Data protocol	None	None
Video format	CIF	None
Video rate (kbps)	325.6	0.0
Audio rate (kbps)	56.0	56.0
Data channel/rate	Off/0.0	Off/0.0
Encryption status	AES	AES
Encryption check code	5048 EB21	2B2C 1ABE
No incoming video.		
Channel Status		Back

Please contact your TANDBERG representative for further information.

Test subsystem

You can test the different subsystems of your videoconferencing equipment.

Test Subsystem
H320 Far End Loop <input checked="" type="radio"/> Off <input type="radio"/> SetLocal <input type="radio"/> RequestRemote
System Selftest
Previous Menu

Far End Loop (ISDN only)

- SetLocal**

This system will loop all incoming audio and video.

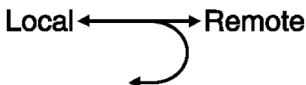
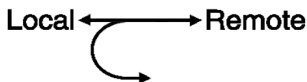
 - The far end will see its own video and hear its own audio.
 - The local side will see and hear the far end.

An on-screen indicator will indicate ‘Local Loop’.
- RequestRemote**

A request will be sent to set the far end in loop.

 - The far end will see and hear the local side (varies depending on implementation of loop functionality).
 - The local side will see its own video and hear its own audio (if the far end supports loop).

If ‘Far End Loop’ is set to ‘RequestRemote’ while in a call and the call is subsequently disconnected, ‘Far End Loop’ will be set to ‘Off’.

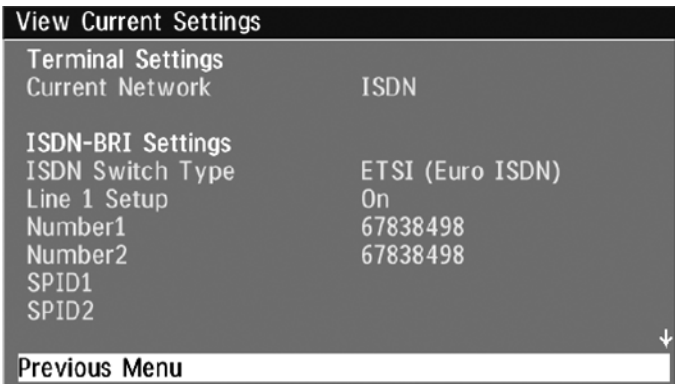


System Selftest

The system performs a check to determine internal hardware integrity. ‘Test Network’ is useful when you want to check if your network connection is active.

View current settings

This window will display all the system settings. Use the ARROW KEYS to scroll through the list.



Restore defaults

You may restore all system settings to the factory default using this function.

IP Address Conflict Check

The codec will give a warning if there is an IP conflict. This check may be initiated by the user by selecting 'IP Address Conflict Check'.



THIS DEFAULT SETTING WILL NOT AFFECT YOUR CALL DIRECTORY INFORMATION, NETWORK TYPE, LINE SETUP NUMBERS OR YOUR SPID NUMBERS IP ADDRESS CONFLICT CHECK.

Appendices

Appendix 1: Connecting to ISDN using NT1 Network Adapters

Appendix 2: Connecting to the Switched 56 Network

Appendix 3: External Network Setup

Appendix 4: Installing A Wireless LAN Card

Appendix 5: Environmental Considerations

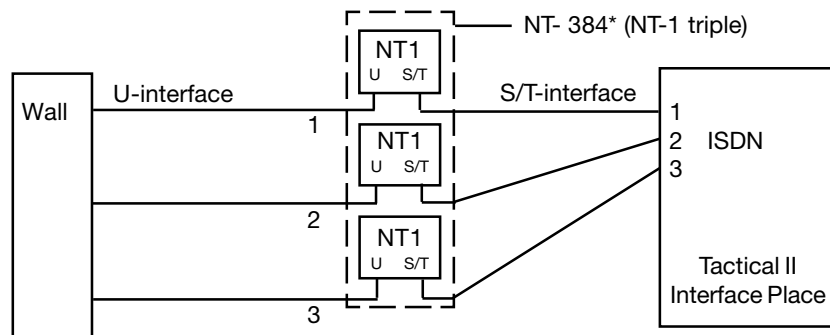
Appendix 6: Using the File System

Appendix 7: Security

Appendix 1: Connecting to ISDN using NT1 network adapters

Connecting

The TANDBERG Tactical II is delivered with the network terminating unit*.



THE EUROPEAN VERSION OF THE TACTICAL II WILL NOT INCLUDE A NETWORK TERMINATING UNIT (NT-384 INTERFACE) AS IT IS NOT REQUIRED FOR NETWORK CONNECTIVITY.

THE NETWORK TERMINATING UNIT IS REQUIRED IN NORTH AMERICA ONLY.

Connect the ISDN-BRI cables from the sockets labeled **ISDN BRI 1/2/3** on the enclosure at the bottom of the cart to the network provider sockets.

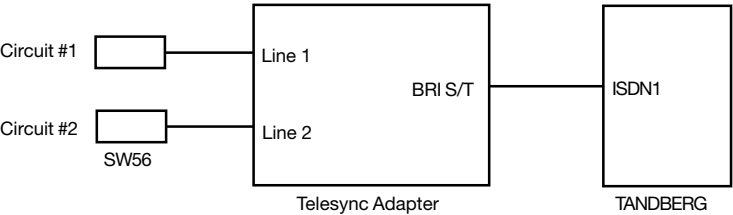
Configuring

To configure the TANDBERG Tactical II system for the network adapter, see 'Advanced Use' > 'Network Configuration' > '**ISDN-BRI Settings**'.

Appendix 2: Connecting to the Switched 56 Network

Using Telesync TS-256 SW56/ISDN adapter

Connecting the system to the SW56 network using a Telesync Adapter is described below.



THERE ARE DIFFERENT TELESYNC ADAPTERS FOR DIFFERENT CONFIGURATIONS OF SW56 NETWORKS. THE NETWORK TYPES TESTED WITH THE SYSTEM ARE SW56 2WIRE AND 4WIRE.

Connecting

Connect the system ISDN1 cable to the BRI S/T interface on the Telesync Adapter. Connect the two SW56 cables from the Telesync adapter Line 1 and Line 2 to the SW56 network.

Configuration of Telesync Adapter

No configuration of the Telesync Adapter is necessary.

Configuration of the system

Select network type to 'National ISDN'.

LINE 1 SETUP

- NUMBER1: program with number from the first SW56 line
- NUMBER2: program with number from the second SW56 line
- SPID1: program with number from the first SW56 line
- SPID2: Leave blank

LINE 2 SETUP

- NUMBER1: number from the third SW56 line
- NUMBER2: number from the fourth SW56 line
- SPID1: Leave blank
- SPID2: Leave blank

And so on for the other lines.

How to call

Important: Use the QUICK KEY '**Set Restrict (56k)**' in the 'Quality' menu to specify a restricted call (56k) when you dial a number.

Set Restrict (56k)

- EXAMPLE ONE NUMBER DIALING ENTER: NUMBER: 1703111222 (56k)
- TWO NUMBER DIALING ENTER: NUMBER: 1703111222 (56k)
- 2ND: 1703111223

Appendix 3: External Network Setup

Your TANDBERG 880 is a version that is equipped with V.35/X.21 network interface instead of ISDN-BRI. All references to ISDN in the TANDBERG 880 User Manual do not apply to this V.35/X.21 version.

Important changes are:

SDN configuration is replaced by Network configuration and is slightly modified:

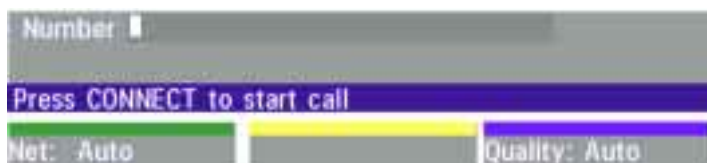
Network configuration

For each installation of the system it is necessary to configure the unit. All configuration parameters are available via the menu system.

Press **MENU** on the remote control. Select the menu **'Terminal Settings'**, then **'Network'**. The **'External Network Settings'** menu will be shown (in this document, see picture and description next page).

Making a call (Making a call is slightly modified)

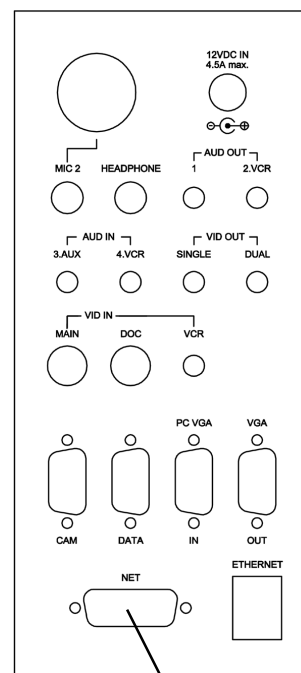
To make a call, press **CONNECT** or enter the number or the IP-address of the unit you wish to call using the **DIALING KEYS** and press **CONNECT**.



V.35/X.21 call

Pressing **CONNECT** will make a call directly if **'Call Control'** is set to **'Leased Line'**, **'Data Triggered'** or **'Manual'** (see next page).

If **'RS 366 Dialing'** is selected, you will be able to specify a number before pressing **CONNECT**.

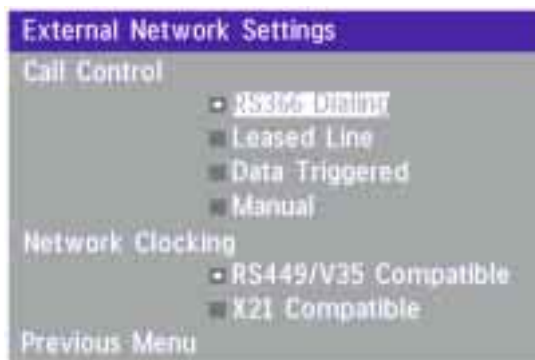


V.35/X.21

connect



ISDN-BRI Settings is replaced by:



External network settings

Before using the system together with external network equipment, you must specify the network parameters on this page.



THE PHYSICAL INTERFACE ON EXTERNAL NETWORKS IS A NON-STANDARD 26 PIN CONNECTOR. SPECIAL CABLES ARE REQUIRED.

Call control

'**RS366 Dialing**' is the only dialing protocol and would normally be used together with network clocking '**RS449/V35 Compatible**' when the external equipment uses RS366 ports.

'**Leased Line**' is a non-dialing protocol and should be used when two codecs are connected in a point to point connection. Use '**Leased Line**' when the handshaking signals DTR and CD are available. DTR and CD correspond to the X.21 network's C and I signals.

'**Data Triggered**' mode uses TxData (transmit data), RxData (receive data) and clock signals only. Use '**Data Triggered**' when no handshake signals are available.

'**Manual**' should be used when no handshake signals are available, and the external equipment requires a constantly connected line.



THE SYSTEM HAS SUPPORT FOR UP TO 768KBPS USING THE EXTERNAL NETWORK (RS449/V.35/X.21) INTERFACE.



TO MAKE AN IP CALL WHEN 'LEASED LINE' IS SELECTED, ENTER A NUMBER BEFORE PRESSING CONNECT TO ACTIVATE THE DIAL MENU.

Network clocking

This setting specifies the number of physical external clock signals.

Use '**RS449/V35 Compatible**' when the external equipment provides two clock signals, one for transmit and one for receive. The difference between RS449 and V.35 is the cable only.

Use '**X.21 Compatible**' when the external equipment provides a common clock signal for both transmit and receive.

Other important comments

The Quality selections in the '**Quality**' menu only apply to IP calls. Use '**ISDN**' in the '**Network**' menu to select V.35/X.21.

MultiSite^{TF} entries can only consist of IP sites.

When V.35/X.21 is used, only point-to-point calls can be made. To make a MultiSite^{TF} call, only IP sites can be called.

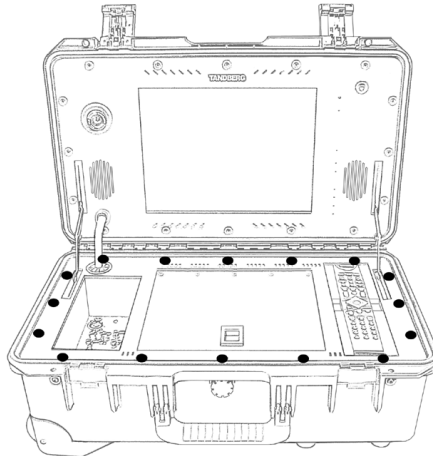


Appendix 4: Installing A Wireless LAN Card

It is important that you follow these instruction for installing a wireless LAN card into the Tactical II or you will risk damaging the system.

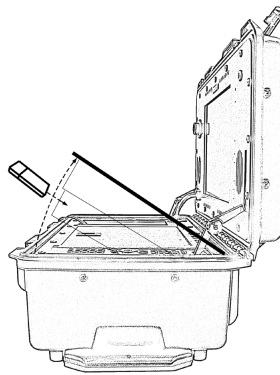
Remove panel mounting screws from the lower portion of the Tactical II.

There are 16 screws (Phillips) you must remove to access the codec's I/O to insert the wireless card.



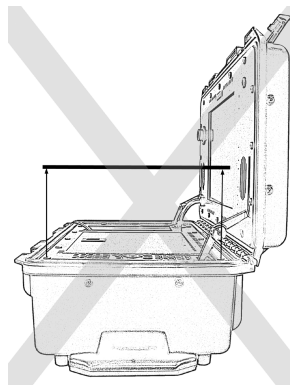
Once the screws are removed, carefully lift FROM THE FRONT of the lower panel, as in the example shown at right.

Insert the wireless card in the slot provided on the left hand side of the codec's I/O.



DO NOT LIFT THE PANEL STRAIGHT UP as you will risk damage to the system.

After inserting the wireless card, carefully replace the panel mount and replace the screws.



Refer to **ADVANCED USE > LAN SETTINGS > WIRELESS LAN SETTINGS** for setup and configuration of your wireless card.

Appendix 5: Environmental Considerations

This section explains how to carry out basic adjustments and simple tests to ensure that you send and receive the best possible image and audio quality when using your system.

Iris control and lighting

By default the system camera will use an automatic iris to compensate for changes in lighting. In addition to this feature you may further assist the system to maintain the best possible image quality by paying special attention to environmental lighting and background colors as described below. Remember the system will send live images of yourself *and* your immediate surroundings.

- Avoid direct sunlight on the subject matter i.e. yourself, the background or onto the camera lens as this will create harsh contrasts.
- If light levels are too low you may need to consider using artificial lighting. As described above, direct illumination of the subject matter and camera lens should be avoided.
- When using artificial lighting, 'daylight' type lamps will produce the most effective results. Avoid colored lighting.
- Indirect light from shaded sources or reflected light from pale walls, often produces excellent results.
- Avoid harsh side lighting or strong light from above. Strong sunlight from a window or skylight may put part or all of the subject matter in shadow or cause silhouetting.
- If you still have problems with the iris and lighting, manual adjustment of the camera parameters might help - see '**Video Settings**' menu.
- Dim scenes can also be improved by manually adjusting the camera brightness setting.

Brightness Control

Adjust the LCD Display or other monitor used, to suit the conditions of the room. For adjusting brightness, colors or other adjustments use the controls for that particular display. Refer to the equipment's user manual for more information.

Background

The appearance of the picture background is very important but easily overlooked. It is important to remember that the camera also shows what is behind you when in a videoconference. To ensure a suitable background we recommend you consider the following:

- Use a neutrally colored background with a medium contrast and a soft texture, e.g. a plain curtain with no heavy patterns or strong colors that may adversely tint the whole scene.
- Avoid moving backgrounds such as curtains blowing in a draught, moving objects, or people walking behind as this may both reduce image quality and distract the attention of the calling party.
- Do not place the camera facing a doorway.

GUIDELINES FOR SETTING UP VIDEOCONFERENCING ROOMS:

THE FOLLOWING ARE A SET OF GUIDELINES TO CONSIDER WHEN EITHER BUILDING A VIDEOCONFERENCING ROOM, OR USING AN EXISTING ROOM FOR VIDEOCONFERENCING.

LIGHTING:

- LOW CONTRAST DESIRED FOR LIGHT INTENSITY. NO DARK SPOTS.
- INTENSITY @ TABLE 800 - 1400 LUX AS MEASURED WITH AN INCIDENT LIGHT METER.
- BLOCK SUNLIGHT FROM ENTERING ROOM.

SEATING AREA (TABLE):

- SHOULD ALLOW ALL PARTICIPANTS TO SEE MONITORS.
- SHOULD ALLOW CAMERA TO "SEE" ALL PARTICIPANTS.
- NON-SHINY NON-PATTERNED PREFERABLY LIGHT GREY SURFACE (IF TABLE USED).

WALLS:

- COLOR: GENERALLY HIGH CONTRAST COLOR DESIRED. LIGHT BLUE IS COMMONLY USED.
- ACOUSTICALLY REFLECTIVE SURFACES (SUCH AS GLASS OR CONCRETE) SHOULD BE COVERED WITH CURTAINS OR SOUND TREATMENT.

AUDIO:

- NOISE FLOOR PREFERRED LESS THAN 44DBC.
- REVERB TIME .3 TO .5 SEC.

VENTILATION:

- KEEP IN MIND NOISE FLOOR.
- VELOCITY = NOISE. THEREFORE KEEP VELOCITY OF AIR LOW.

ROOM:

- SHOULD BE LOCATED AWAY FROM NOISE
- SHOULD NOT HAVE WINDOWS
- DOORS SHOULD BE LOCATED OFF CAMERA

Loudspeaker volume

The audio system uses a built-in high quality loudspeaker with amplifier specifically designed for this system. The volume of the audio system is controlled by the volume control keys on the TANDBERG Intern II remote control. The loudspeakers of any monitor that may be connected to the TANDBERG Intern II are not used.

How to prepare a typical room for videoconferencing

The diagram below shows a typical room designed to obtain the best results when using a videoconferencing system.

The microphone should be near or at the front of the table to ensure that all speech will be detected. The best position for the microphone is at least 2 meters (6.5 feet) in front of the system on a plain, flat table with at least 0.3 meters (12 inches) of table in front of the microphone.

The document camera should be close to the chair person or a designated controller of the document camera for ease of use. (Remember to arrange all the peripherals so that one participant can reach each of them to point, change the display, tape, and so forth).

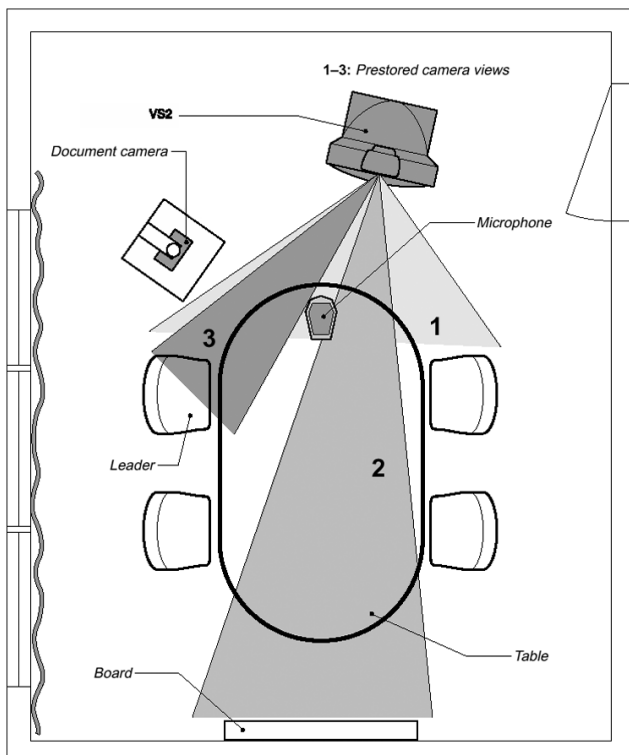
The camera supports up to 15 pre-stored camera positions.

The illustration shows three possible camera positions; one for all the participants, one for the whiteboard and one for the main speaker. The remaining presets are then available for other peripheral equipment, for example: a VCR.

Position the system in such a way as to avoid the possibility of somebody inadvertently walking into the camera's field of view when entering the room. Other than the conference participants, there should be no moving items in the sent image.



THE INTERN II IS A MOBILE SYSTEM THAT IS DESIGNED FOR SMALLER ROOMS. THESE GUIDELINES SHOULD BE APPLIED AS BEST AS POSSIBLE TO ENSURE



Appendix 6: Using the File System

It is possible to access a file system within the TANDBERG system by using FTP:

DOS-window: ftp <IP-address of codec>, or

Web-browser: ftp:// <IP-address of codec>

Description of the different files

all.prm	all settings in the system (including directory)
dir.prm	directory entries
event.log	logs fault situations etc.
sw.pkg	the system software
globdir.prm	file containing up to 400 entries. These entries can not be edited from the TANDBERG Videoconferencing system, but can be edited as a text-file.

Files accessible only by 'ftp get /tmp/snapshots/xxx.jpg' or 'http://<IP-address of codec>/tmp/snapshots/xxx.jpg':

main.jpg	Snapshot of current stream if MultiSite ^{TF} .
local.jpg	Snapshot of selfview
farend.jpg	Snapshot of decoded stream if point-to-point.
duovideo.jpg	Snapshot of the encoded stream if transmitting DuoVideo ^{TF} , the decoded stream if receiving DuoVideo ^{TF} .

Description of the different folders

user	a folder to be used for custom logos etc.
remote	a folder used for software upgrade of the far end TANDBERG system

What can be done by using the file system?

- software upgrade of the far end TANDBERG system (B3 or above) via ISDN
- upload of custom logos

Software upgrade

- Connect to the system you want to upgrade using ISDN.
- Copy the software file to a folder on your harddisk.
- Open a DOS-window and go to this folder.
- Type ftp <IP-address of your local codec>.
- Enter password: <Release Key of far end system>
- Go to the remote folder, type “cd remote”
- Upload the software file, type put <s0xxxxxx.pkg>
- Wait until the following is shown:

```
226 Closing data connection.
5437569 bytes sent in 808.01 seconds (6.73 Kbytes/sec)
ftp>
```
- Restart the far end codec.

The far end system should now be upgraded. For further information, please contact your TANDBERG representative.

Custom logos

- Go to the folder where your logo is located.
- Type ftp <IP-address of your local codec>.
- Go to the user folder, type “cd user”
- Upload the logo, type put <startup.jpg>



LOGO MAX SIZE: 704x480
FILE-FORMAT: JPG. IF THE FILE IS
TOO LARGE, NO LOGO WILL BE
DISPLAYED.

The new logo will be displayed the next time you restart your system.

Appendix 7: Security

The TANDBERG Videoconferencing Unit has several features both to protect from unauthorized use and system access.

Access Code

When 'Access Code' is enabled, the user will be asked to enter an access code before he/she is able to make a call.

The system will verify if the entered access code is valid by checking the code with the allowed codes listed in the 'access.txt' file on the ftp-server in the codec.

If no 'access.txt' file is uploaded to the codec, registration of the code will be done without validation. E.g. you can enter whatever code you want and have access to the system.

The 'access.txt' file is a plain text file with one line per access code as shown at right.

To upload this file to the codec, follow these steps:

- Open a DOS-window and go to the folder where the 'access.txt' file is located.
- Type **ftp <IP-address of your local codec>**.
- **User:**, press Enter or enter IP-password.
- Type **bin** and press Enter
- Go to the user folder by typing **cd user**.
- To upload the 'access.txt' file, type **put access.txt**.
- To exit from ftp, type **bye**.

1234

1250

A1

B2

ABC

Menu Password:

Access to the menu system on the TANDBERG Videoconferencing unit can be controlled using password protection. This is done by using the following dataport command:

```
menupassword set <pin-code>
```

The pin-code should be maximum 5 - five digits. To erase the menu access code, enter an empty pin-code.

Streaming password

By setting a streaming password in the streaming menu on the TANDBERG codec, a password have to be entered on the streaming client to be able to see the videostream from the TANDBERG Videoconferencing Unit.

IP Password

By setting a IP Password on the TANDBERG codec, all access to the system using IP (Telnet, FTP, WEB) requires a password. This password can be enabled from telnet or dataport using the command: **ippassword <ip-password>**. The default IP password is **TANDBERG**.

To remove this password, use the command: **ippassword ""**. From telnet, this is only possible by first entering the correct password.

Services

The different IP services on the TANDBERG codec - FTP, Telnet, HTTP, SNMP and H.323 can be disabled to prevent access to the system. By using the commands below, the services can be independently enabled/disabled:

```
services <telnet/ftp/http/h323/remote-parameter/remote-
software> <enable/disable>

services <snmp> <read-only/enable/disable>

services <telnetchallenge> <enable/disable> [port]
```

SNMP Security alert

This function will notify any Management Application (such as TMS - TANDBERG Management Suite) if anyone tries to perform Remote Management on the TANDBERG Codec using a illegal password. The Security alert that is sent to the Management Application will contain information about the IP address and the service (WEB, Telnet, FTP) being used for the attempt.



IF TMS IS USED, EMAIL NOTIFICATIONS OR ALARMS ABOUT THE ATTEMPT CAN BE SENT TO SPECIFIED PERSONS.

Encryption

All TANDBERG systems support both AES* and DES encryption. By default this feature is enabled such that when connecting with any other video system or MCU, a TANDBERG system will attempt to establish a secure conference using AES* or DES encryption. The TANDBERG system will attempt this for both IP and ISDN connections. Where a remote system or MCU supports encryption, the highest common encryption algorithm will be selected on a port by port basis.

The type and status of the encryption negotiated is indicated by padlock symbols and on-screen messages. Encryption on the TANDBERG systems is fully automatic, and provides clear security status indicators;

- An open padlock indicates that encryption is being initialized, but the conference is not yet encrypted.
- Single padlock indicates DES encryption.
- Double padlock indicates AES* encryption.

In addition to on-screen indicators the 'Call Status' menu provides two information fields regarding call encryption. The first field is the 'Encryption Code' which will identify either 'AES' or 'DES'. The second field is the 'Encryption Check Code' and is comprised of an alphanumeric string. This string will be the same for systems on either side of an encrypted conference.

If the Check Codes do not match this would indicate that the call has been exposed to a 'Man In The Middle' attack.

When a TANDBERG codec with MultiSite^{TF} functionality hosts a conference, the highest possible encryption algorithm will be negotiated on a site by site basis. MultiSite conferences can therefore support a mix of AES* and DES encrypted endpoints in the same conference.

A conference will only be as secure as its 'weakest link'. Even though conference participants may have negotiated and be running AES* encryption, if just one participant has negotiated DES encryption, the AES system will display the single padlock symbol to advise all users of the lowest encryption mechanism currently in effect.

All TANDBERG endpoint supporting DES encryption can upgrade to AES* encryption by applying TANDBERG's AES* Encryption option. Please contact your TANDBERG representative for more information.

The standards supporting the encryption mechanisms employed by TANDBERG are: AES*, DES, H.233, H.234 and H.235 with extended Diffie Hellman key distribution via H.320, H.323 and Leased Line connections.



THE TANDBERG AES IMPLEMENTATION IS VALIDATED AS CONFORMING TO THE **ADVANCED ENCRYPTION STANDARD (AES) ALGORITHM**, AS SPECIFIED IN FEDERAL INFORMATION PROCESSING STANDARD PUBLICATION 197, ADVANCED ENCRYPTION STANDARD, BY THE THE NATIONAL INSTITUTE OF STANDARDS AND TECHNOLOGY (NIST)

Technical Description

Function/Purpose:

The TANDBERG Tactical II videoconferencing system is designed for field use by both military and civilian personnel.

Tactical II Input Power: 12VDC, 4.5A max.
 DC/DC Power Supply: Input 12-32VDC, 15A max. / Output 12V, 6.0A
 AC/DC Power Supply: Input 100-240VDC, 1.5A / Output 12VDC, 5.5A
 Dimensions (external): L21.7" x W14.1" x H8.9"
 Package Dimensions: L24.5" x W16.5" x H18.5"
 Weight: 33 lbs. (system only)
 Operating Temperature: 0 to 35°C (32 to 95°F) Ambient Temperature
 Humidity: 30% to 85% Relative Humidity
 Storage and Transport: -10 to 40°C (14 to 140°F) at
 RH 10-90% (non condensing)
 Type: Non Classified
 Approvals: UL60950, CSA60950, FCC-A, CE

LCD MONITOR

Display Type: Active Matrix (a-si TFT) / Flat
 Screen Size: 13"
 Pixel Resolution: 921,000 dots (480 x 640 VGA)
 Aspect Ratio: 4:3
 Contrast Ratio: 500:1
 Brightness: 430 cd/M²
 Viewing Angle (horizontal/vertical): 170° H x 170° V

INTEGRATED CAMERA

Pick-up Element: 1/3" Interline CCD
 Resolution: 450 Lines
 Light Sensitivity: 3 Lux
 Lens: 4.0mm
 S/N Ratio: 46dB or more
 Auto Gain Control: Yes
 Auto White Balance: Yes

W.A.V.E. (WIDE ANGLE VIEW) II CAMERA (OPTIONAL)

10 x zoom
 1/4" CCD
 +15° / -20° tilt, + / -95° pan
 61° vertical field of view
 96° total vertical field of view
 77° horizontal field of view
 267° total horizontal field of view
 460 (PAL) / 470 (NTSC) TV lines
 Min. illumination 2 Lux (F1.8)
 Auto or manual focus / brightness / white balance
 Far end camera control
 15 near and far-end camera pre-sets
 Voice-activated camera positioning

BANDWIDTH

H.320 up to 384kbps
 H.323 up to 768kbps

VIDEO

Video Standards: H.261, H.263, H.263+, H.263++ (Natural Video^{TF}), H.264

VIDEO FEATURES

Picture in Picture (PIP)
 Intelligent Video Management^{TF}

VIDEO INPUTS (4 INPUTS)

1 x MiniDin, S-video: document camera
 1 x RCA/Phono, composite: built-in camera
 1 x RCA/Phono, composite: VCR
 1 x XGA: PC

VIDEO OUTPUTS (4 OUTPUTS)

1 x MiniDin, S-video: main monitor
 1 x RCA/Phono, composite: main monitor or VCR
 1 x RCA/Phono, composite: dual monitor
 1 x XGA: main or dual monitor

XGA INPUT / XGA OUTPUT

Input: 640 x 480 – 1024 x 768, 56 – 85 Hz. auto-detection
 Output: 640 x 480 – 1024 x 768, 60 Hz

VIDEO FORMAT

NTSC or PAL, VGA, SVGA or XGA

LIVE VIDEO RESOLUTION

Native: NTSC
 4SIF (704 x 480 pixels), Digital Clarity^{TF}
 Interlaced SIF^{TF} (352 x 480 pixels) Natural Video^{TF}
 SIF (352 x 240 pixels)
 Native: PAL
 4SIF (704 x 480 pixels), Digital Clarity^{TF}
 Interlaced SIF^{TF} (352 x 480 pixels) Natural Video^{TF}
 SIF (352 x 240 pixels)
 Native PC Resolution:
 XGA (1024 x 768 pixels)
 SVGA (800 x 600 pixels)
 VGA (640 x 480 pixels)

STILL IMAGE TRANSFER

CIF, SIF, 4CIF (H.261 Annex D) 4 SIF, VGA, SVGA, XGA

AUDIO

Audio Standards: G.711, G.722, G.722.1, G.728

AUDIO FEATURES

Telephone add-on via Multisite^{TF}
 Audio level meters
 Automatic noise reduction
 Two separate acoustic echo cancellers
 Audio mixer
 Automatic gain control
 VCR ducking

AUDIO INPUTS (4 INPUTS)

1 x microphone, 11V phantom powered, XLR connector, or 1/4" stereo
 1 x internal microphone
 1 x RCA/Phono, Line level: auxiliary
 1 x RCA/Phono, Line level: VCR

AUDIO OUTPUTS (4 OUTPUTS)

2 x RCA/Phono, main audio and built-in speakers
 1 x RCA/Phono, Line level: VCR
 1 x 1/4" stereo jack headphones

FRAME RATES

15 frames per second @56 - 128kbps
 30 frames per second @ 168 - 768kbps
 Point-to-point only: 60 fields/sec @ 336kbps - 768kbps (Natural Video^{TF})

MULTISITE^{TF} FEATURES

Support for ISDN or IP telephones
 ISDN & IP Downspeeding^{TF} at call set-up
 Dial in / Dial out capabilities
 Continuous Presence or Voices Switched
 Chair control for host system (ISDN Version)
 5 sites including min. 1 telephone call
 Built-in Multisite^{TF} audio bridge for up to 5 sites
 Built-in MultiSite^{TF} IP audio bridge for up to 4 sites
 Duo Video^{TF}, Digital Clarity^{TF}
 MultiSite^{TF} and (H.243) Cascading over ISDN and IP
 Up to 10 video and 4 audio sites
 Any combination of IP & ISDN connections (transcoding)
 MultiSite^{TF} over IP
 4 sites @ 64-256kbps + 1 telephone call via ISDN
 3 sites @ 64-384kbps + 2 telephone calls via ISDN
 Point-to-point @ 768kbps + 3 telephone calls via ISDN
 MultiSite^{TF} over ISDN / 3BRI
 4 sites @ 128kbps or 3 sites @ 192kbps
 3 sites @ 128kbps + 2 telephone calls via ISDN
 Point-to-point @ 192kbps + 2 telephone calls via ISDN

DUO VIDEO^{TF}

Available on all networks
 Available from host system in MultiSite^{TF} (over IP & ISDN)

NETWORK FEATURES

Auto H.320/H.323 dialing
 Downspeeding^{TF}
 Programmable network profiles
 Intelligent Call Management^{TF}
 Maximum call length timer
 Automatic SPID and line number configuration
 (National ISDN, GR-2941 - CORE)
 SoftMux^{TF}

EMBEDDED ENCRYPTION

H.320 and H.323 point-to-point and multipoint calls
 Standards-based: H.233, H.234, H.235, DES and AES
 Automatic key generation and exchange
 Supported in DuoVideo^{TF}

H.323 NETWORK FEATURES

Differentiated Services (DiffServ)
 Resource Reservation Protocol (RSVP)
 IP precedence (QoS)
 IP type of service (TOS)
 Network Address Translation (NAT) Support
 IP adaptive bandwidth management (including flow control)
 Auto gatekeeper discovery
 Dynamic playout and lipsync buffering
 Intelligent Packet Loss Recovery^{TF} (IPLR^{TF})

SECURITY FEATURES

IP password
 Menu Password
 Access code
 Streaming password
 H.243 MCU password
 VNC password
 SNMP security alert
 Encrypted HTTP password
 Possibility to disable IP services

NETWORK INTERFACES

OPTION 1 (Part# 5000720):
 3 x ISDN BRI (RJ-45), S-interface
 1 x LAN/Ethernet (RJ-45) 10/100 Mbit (LAN/DSL/cable modem)
 1 x PC card slot (PCMCIA) for wireless LAN *

OPTION 2 (Part #:5000727):

1 x V. 35/RS-449 with Rs -366 dialing, leased line or data triggered mode
 1 x LAN/Ethernet (RJ-45) 10/100 Mbit (LAN/DSL/cable modem)
 1 x PC card slot (PCMCIA) for wireless LAN *

WIRELESS LAN SUPPORT *

Compliant with IEEE 802.11b, up to 11Mbit
 Support for 64/128bit encryption (WEP)
 Infrastructure or ad-hoc mode

ETHERNET / INTERNET / INTRANET CONNECTIVITY

TCP/IP, DHCP, ARP, FTP, Telnet, HTTP
 SNMP Enterprise Management
 Internal web server
 Internal streaming server (streams local and far-end site)
 10/100Mbit full/half duplex (manual or auto detect selection)

OTHER MAJOR ITU STANDARDS SUPPORTED

H.231, H.233, H.234, H.235, H.241, H.243, H.281, BONDING (ISO 13871), H.320, H.323

PRESENTATIONS AND COLLABORATION

Natural Presenter Package including:
 PC Presenter^{TF}
 PC Softpresenter^{TF}
 Digital Clarity^{TF}
 Duo Video^{TF}
 T. 120 Microsoft NetMeeting support via RS-232
 (9-pin D-sub)
 Streaming (compatible with Cisco IP/TV, Apple Quick Time,
 RealPlayer, etc.)

CLOSED CAPTIONING/TEXT CHAT

T.140 standards based

SYSTEM MANAGEMENT

Support for the TANDBERG Management Suite
 Total management via embedded web browser, SNMP, Telnet and FTP
 Remote software upload: during a call over all networks, via web-server,
 and via FTP server
 1 x RS-232
 Remote control and on-screen menu system

DIRECTORY SERVICES

400 number global directory
 100 number local directory including:
 16 Dedicated MultiSite^{TF} entries

11 SELECTABLE MENU LANGUAGES:

Chinese, English, French, German, Italian, Japanese, Norwegian,
 Portuguese, Russian, Spanish and Swedish

CUSTOMIZED BOOT UP LOGO (JPEG)

TF indicates a TANDBERG First

System features vary depending on network selection and software package. All specifications subject to change without notice.

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Servicing

Do not attempt to service the apparatus yourself, otherwise the warranty will be voided. Opening or removing covers may expose you to dangerous voltage or other hazards. Refer all servicing to qualified service personnel.

Damage Requiring Service

Unplug the apparatus from the outlet and refer servicing to qualified personnel under the following conditions:

When the power cord or plug is damaged or frayed.

If liquid has been spilled or an object has fallen into the apparatus.

If the apparatus has been exposed to rain or moisture.

If the apparatus has been subject to excessive shock by being dropped.

If the apparatus does not operate normally when following the operating instructions.

Note: TANDBERG will provide on request circuit diagrams and component parts list of the system.

For servicing, please contact one of our service centers.

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